

Adopted Levels, Gammas

| Type            | Author                 | History | Citation          | Literature Cutoff Date |
|-----------------|------------------------|---------|-------------------|------------------------|
| Full Evaluation | Jun Chen, Balraj Singh |         | NDS 164, 1 (2020) | 15-Feb-2020            |

$Q(\beta^-) = -8250.30$ ;  $S(n) = 11586.7$ ;  $S(p) = 6010.40$ ;  $Q(\alpha) = -1162.6$  [2017Wa10](#)

$S(2n) = 21280.6$ ,  $S(2p) = 9819.5$  ([2017Wa10](#)).

Mass measurement: [2009El08](#), [1982Th01](#).

[Additional information 1](#).

Theory references: consult the NSR database ([www.nndc.bnl.gov/nsr/](http://www.nndc.bnl.gov/nsr/)) for 27 primary references dealing with nuclear structure calculations.

 $^{98}\text{Pd}$  LevelsCross Reference (XREF) Flags

|          |                                                           |          |                                                |
|----------|-----------------------------------------------------------|----------|------------------------------------------------|
| <b>A</b> | $^{98}\text{Ag}$ $\varepsilon$ decay (47.5 s)             | <b>E</b> | $^{92}\text{Mo}(^{10}\text{B}, 3\text{npy})$   |
| <b>B</b> | $^{99}\text{Cd}$ $\varepsilon\text{p}$ decay (17 s)       | <b>F</b> | $^{96}\text{Ru}(\alpha, 2\text{n}\gamma)$      |
| <b>C</b> | $^{50}\text{Cr}(^{58}\text{Ni}, 2\text{p}2\alpha\gamma)$  | <b>G</b> | $^{96}\text{Ru}(^{16}\text{O}, ^{14}\text{C})$ |
| <b>D</b> | $^{70}\text{Ge}(^{32}\text{S}, 2\text{p}2\text{n}\gamma)$ |          |                                                |

| E(level) <sup>†</sup>   | J <sup>π</sup> <sup>‡</sup> | T <sub>1/2</sub> <sup>b</sup> | XREF     | Comments                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------|-----------------------------|-------------------------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0.0 <sup>c</sup>        | 0 <sup>+</sup>              | 17.7 min 4                    | ABCDEFGG | $\% \varepsilon + \% \beta^+ = 100$<br>T <sub>1/2</sub> : weighted average of 17.7 min 4 ( <a href="#">1972Ga21</a> ), 18.0 min 5 ( <a href="#">1972Ba37</a> ), 18 min 1 ( <a href="#">1969An32</a> ), 17.5 min 5 ( <a href="#">1956Ka25</a> ). Others: 17 min 3 ( <a href="#">1955At34</a> ), 15 min 3 ( <a href="#">1953At27</a> ).                                                                                               |
| 862.69 <sup>c</sup> 11  | 2 <sup>+</sup>              | <11.3 ps                      | A CDEFG  | J <sup>π</sup> : 862.7γ E2 to g.s.                                                                                                                                                                                                                                                                                                                                                                                                  |
| 1541.24 <sup>c</sup> 13 | 4 <sup>+</sup>              | 11.7 ps 21                    | A CDEFG  | XREF: G(1521).<br>J <sup>π</sup> : 678.5γ E2 (ΔJ=2) to 2 <sup>+</sup> ; yrast band member.                                                                                                                                                                                                                                                                                                                                          |
| 1966.02 15              | (2 <sup>+</sup> )           | <145 fs                       | A E      | J <sup>π</sup> : from $\gamma\gamma(\theta)$ in $^{92}\text{Mo}(^{10}\text{B}, 3\text{npy})$ ( <a href="#">2009FrZZ</a> ), but no details available.<br>T <sub>1/2</sub> : from DSAM in $^{92}\text{Mo}(^{10}\text{B}, 3\text{npy})$ ( <a href="#">2009FrZZ</a> ).<br>Possible fragment of one-phonon mixed symmetry state ( <a href="#">2009FrZZ</a> ), based on large M1 transition strength for γ to first 2 <sup>+</sup> state. |
| 2112.30 <sup>c</sup> 14 | 6 <sup>+</sup>              | 19.3 ps 14                    | A CDEF   | J <sup>π</sup> : 571.9γ E2 (ΔJ=2) to 4 <sup>+</sup> ; yrast band member.                                                                                                                                                                                                                                                                                                                                                            |
| 2222.2 <sup>a</sup>     | (2 <sup>+</sup> )           | <90 fs                        | E G      | XREF: G(2242).<br>J <sup>π</sup> : possible γ to 0 <sup>+</sup> , but 3,4 <sup>+</sup> are not ruled out.<br>T <sub>1/2</sub> : from DSAM in $^{92}\text{Mo}(^{10}\text{B}, 3\text{npy})$ ( <a href="#">2009FrZZ</a> ).<br>Possible fragment of one-phonon mixed symmetry state ( <a href="#">2009FrZZ</a> ), based on large M1 transition strength for γ to first 2 <sup>+</sup> state.                                            |
| 2289.29 13              | (4 <sup>+</sup> )           |                               | A        | J <sup>π</sup> : 1426.6γ to 2 <sup>+</sup> ; weak β feeding from (6 <sup>+</sup> ) parent.                                                                                                                                                                                                                                                                                                                                          |
| 2300.2 <sup>a</sup>     |                             |                               | E        |                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 2407.83 14              | (4,5,6 <sup>+</sup> )       |                               | A        | J <sup>π</sup> : 866.7γ to 4 <sup>+</sup> ; weak β feeding from (6 <sup>+</sup> ) parent.                                                                                                                                                                                                                                                                                                                                           |
| 2564.13 14              | (5,6 <sup>+</sup> )         |                               | A D G    | XREF: D(?).<br>J <sup>π</sup> : 451.8γ to 6 <sup>+</sup> , 1022.9γ to 4 <sup>+</sup> ; β feeding from (6 <sup>+</sup> ) parent.                                                                                                                                                                                                                                                                                                     |
| 2616.87 14              | (5,6 <sup>+</sup> )         |                               | A        | J <sup>π</sup> : 1075.6γ to 4 <sup>+</sup> ; β feeding from (6 <sup>+</sup> ) parent.                                                                                                                                                                                                                                                                                                                                               |
| 2619.96 16              | (5 <sup>-</sup> )           |                               | A CD     | J <sup>π</sup> : proposed by <a href="#">1984Pi11</a> in ( $^{32}\text{S}, 2\text{p}2\text{n}\gamma$ ) based on γ(θ) and systematics; β feeding from (6 <sup>+</sup> ) parent.<br>Possible configuration = $\pi g_{9/2}^{-1} \otimes \pi p_{1/2}^{-1}$ ( <a href="#">1997Ce08</a> ).                                                                                                                                                |
| 2700.8 <sup>a</sup>     |                             |                               | E        |                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 2724.37 14              | (5,6 <sup>+</sup> )         |                               | A        | J <sup>π</sup> : 1183.0γ ray to 4 <sup>+</sup> , 612.0γ to 6 <sup>+</sup> ; β feeding from (6 <sup>+</sup> ) parent.                                                                                                                                                                                                                                                                                                                |
| 2766.94 16              | (4 <sup>+</sup> )           |                               | A        | J <sup>π</sup> : 1904.7γ to 2 <sup>+</sup> ; weak β feeding from (6 <sup>+</sup> ) parent.                                                                                                                                                                                                                                                                                                                                          |
| 2773.03 <sup>c</sup> 14 | 8 <sup>+</sup>              | 66.3 ps 14                    | A CDEFG  | XREF: G(2792).<br>J <sup>π</sup> : ΔJ=2, E2 γ to 6 <sup>+</sup> ; g.s. band member.                                                                                                                                                                                                                                                                                                                                                 |
| 2784.00 17              | (4,5,6 <sup>+</sup> )       |                               | A        | J <sup>π</sup> : 494.7γ to (4 <sup>+</sup> ); weak β feeding from (6 <sup>+</sup> ) parent.                                                                                                                                                                                                                                                                                                                                         |
| 2863.5 <sup>a</sup>     |                             |                               | E        |                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 3003.59 22              | (4 <sup>+</sup> )           |                               | A        | J <sup>π</sup> : 2140.8γ to 2 <sup>+</sup> ; weak β feeding from (6 <sup>+</sup> ) parent.                                                                                                                                                                                                                                                                                                                                          |

Continued on next page (footnotes at end of table)

**Adopted Levels, Gammas (continued)** $^{98}\text{Pd}$  Levels (continued)

| E(level) <sup>†</sup>       | J <sup>π</sup> <sup>‡</sup>         | XREF | Comments                                                                                                                                                                                                   |
|-----------------------------|-------------------------------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3008.89 14                  | (5,6 <sup>+</sup> )                 | A    | J <sup>π</sup> : 1467.5γ to 4 <sup>+</sup> ; β feeding from (6 <sup>+</sup> ) parent.                                                                                                                      |
| 3021.61 24                  |                                     | A    |                                                                                                                                                                                                            |
| 3076.39 14                  | (6 <sup>+</sup> ,7)                 | A    | J <sup>π</sup> : 303.3γ to 8 <sup>+</sup> ; β feeding from (6 <sup>+</sup> ) parent.                                                                                                                       |
| 3091.40 14                  | (4,5,6 <sup>+</sup> )               | A    | J <sup>π</sup> : 1549.7γ to 4 <sup>+</sup> ; weak β feeding from (6 <sup>+</sup> ) parent.                                                                                                                 |
| 3117.51 24                  |                                     | A    |                                                                                                                                                                                                            |
| 3125.13 14                  | (5 <sup>+</sup> ,6 <sup>+</sup> )   | A    | J <sup>π</sup> : 1583.7γ to 4 <sup>+</sup> ; possible allowed β feeding from (6 <sup>+</sup> ).                                                                                                            |
| 3172.97 19                  |                                     | A    |                                                                                                                                                                                                            |
| 3219.30 14                  | (6 <sup>+</sup> ,7,8 <sup>+</sup> ) | A G  | XREF: G(?).<br>J <sup>π</sup> : 1106.8γ to 6 <sup>+</sup> , 446.2γ to 8 <sup>+</sup> ; weak β feeding from (6 <sup>+</sup> ) parent.                                                                       |
| 3301.4 <sup>a</sup>         |                                     | E    |                                                                                                                                                                                                            |
| 3345.15 14                  | (5,6 <sup>+</sup> )                 | A    | J <sup>π</sup> : 1803.8γ to 4 <sup>+</sup> ; β feeding from (6 <sup>+</sup> ) parent.                                                                                                                      |
| 3347.83 25                  | (4 <sup>+</sup> )                   | A    | J <sup>π</sup> : 1381.8γ to (2 <sup>+</sup> ); possible weak β feeding from (6 <sup>+</sup> ) parent.                                                                                                      |
| 3349.16 20                  |                                     | A    |                                                                                                                                                                                                            |
| 3378.36 <sup>&amp; 19</sup> | (7 <sup>-</sup> ) <sup>&amp;</sup>  | A C  | J <sup>π</sup> : 758.4γ (Q) to (5 <sup>-</sup> ); β feeding from (6 <sup>+</sup> ) parent.                                                                                                                 |
| 3401.50 16                  | (4 <sup>+</sup> )                   | A    | J <sup>π</sup> : 2539.2γ to 2 <sup>+</sup> ; weak β feeding from (6 <sup>+</sup> ) parent.                                                                                                                 |
| 3440.64 14                  | (5,6 <sup>+</sup> )                 | A G  | XREF: G(3425).<br>J <sup>π</sup> : 1899.4γ to 4 <sup>+</sup> ; β feeding from (6 <sup>+</sup> ).                                                                                                           |
| 3488.83 25                  | (6 <sup>+</sup> ,7,8)               | A    | J <sup>π</sup> : 715.8γ to 8 <sup>+</sup> ; weak β feeding from (6 <sup>+</sup> ) parent.                                                                                                                  |
| 3553.18 15                  | (4 <sup>+</sup> )                   | A    | J <sup>π</sup> : 2690.5γ to 2 <sup>+</sup> ; weak β feeding from (6 <sup>+</sup> ) parent.                                                                                                                 |
| 3582.6 4                    |                                     | A    |                                                                                                                                                                                                            |
| 3601.55 14                  | (5,6 <sup>+</sup> )                 | A    | J <sup>π</sup> : 2060.3γ to 4 <sup>+</sup> ; β feeding from (6 <sup>+</sup> ) parent.                                                                                                                      |
| 3633.30 14                  | (5,6,7) <sup>#</sup>                | A    |                                                                                                                                                                                                            |
| 3644.49 <sup>c 20</sup>     | 10 <sup>+</sup>                     | CD F | J <sup>π</sup> : 871.4γ Q (ΔJ=2) to 8 <sup>+</sup> ; yrast band member.                                                                                                                                    |
| 3708.75 16                  | (4,5,6 <sup>+</sup> )               | A    | J <sup>π</sup> : 1419.5γ to (4 <sup>+</sup> ); possible weak β feeding from (6 <sup>+</sup> ).                                                                                                             |
| 3739.83 25                  |                                     | A    |                                                                                                                                                                                                            |
| 3752.64 16                  | (9 <sup>+</sup> )                   | A C  | J <sup>π</sup> : 979.4γ possible (D+Q) to 8 <sup>+</sup> , 434.1γ (D) with ΔJ=1 from (10 <sup>+</sup> ).                                                                                                   |
| 3759.66 15                  | (5,6,7) <sup>#</sup>                | A    |                                                                                                                                                                                                            |
| 3763.27 14                  | (5,6,7) <sup>#</sup>                | A    |                                                                                                                                                                                                            |
| 3816.38 17                  | (5,6,7) <sup>#</sup>                | A    |                                                                                                                                                                                                            |
| 3852.93 14                  | (5,6 <sup>+</sup> )                 | A g  | J <sup>π</sup> : 2311.6γ to 4 <sup>+</sup> ; β feeding from (6 <sup>+</sup> ) parent.                                                                                                                      |
| 3893.67 19                  |                                     | A g  |                                                                                                                                                                                                            |
| 3905.33 15                  | (5,6,7) <sup>#</sup>                | A    |                                                                                                                                                                                                            |
| 3927.98 25                  |                                     | A    |                                                                                                                                                                                                            |
| 3950.99 15                  | (5,6,7) <sup>#</sup>                | A    |                                                                                                                                                                                                            |
| 3965.15 15                  | (5,6,7) <sup>#</sup>                | A    |                                                                                                                                                                                                            |
| 3969.28 14                  | (5,6 <sup>+</sup> )                 | A    | J <sup>π</sup> : 2428.6γ to 4 <sup>+</sup> ; β feeding from (6 <sup>+</sup> ) parent.                                                                                                                      |
| 3976.29 14                  | (6 <sup>+</sup> ,7)                 | A    | J <sup>π</sup> : 1203.5γ to 8 <sup>+</sup> ; β feeding from (6 <sup>+</sup> ) parent.                                                                                                                      |
| 3988.1 4                    | (10 <sup>+</sup> )                  | C    | J <sup>π</sup> : possible non-stretched dipole 343.8γ to (10 <sup>+</sup> ), proposed by 1997Ce08 in ( $^{58}\text{Ni}, 2p2\alpha\gamma$ ).                                                                |
| 3991.8 3                    |                                     | A    |                                                                                                                                                                                                            |
| 4050.49 15                  | (6 <sup>+</sup> ,7)                 | A    | J <sup>π</sup> : 1277.3γ to 8 <sup>+</sup> ; β feeding from (6 <sup>+</sup> ) parent.                                                                                                                      |
| 4081.63 15                  | (5,6,7) <sup>#</sup>                | A g  |                                                                                                                                                                                                            |
| 4090.60 16                  | (5,6,7) <sup>#</sup>                | A g  |                                                                                                                                                                                                            |
| 4092.1 4                    | (4,5,6 <sup>+</sup> )               | A g  | J <sup>π</sup> : 2550.8γ to 4 <sup>+</sup> ; possible weak β feeding from (6 <sup>+</sup> ) parent.                                                                                                        |
| 4105.24 24                  |                                     | A    |                                                                                                                                                                                                            |
| 4124.54 22                  | (5,6 <sup>+</sup> )                 | A    | J <sup>π</sup> : 1835.6γ to (4 <sup>+</sup> ); β feeding from (6 <sup>+</sup> ).                                                                                                                           |
| 4136.2 4                    |                                     | A    |                                                                                                                                                                                                            |
| 4145.1 <sup>&amp; 5</sup>   | (9 <sup>-</sup> ) <sup>&amp;</sup>  | C    | J <sup>π</sup> : 767.0γ (Q) to (7 <sup>-</sup> ).                                                                                                                                                          |
| 4152.58 14                  | (6 <sup>+</sup> ,7 <sup>+</sup> )   | A    | J <sup>π</sup> : 2040.3γ to 6 <sup>+</sup> ; 1379.6γ to 8 <sup>+</sup> ; allowed β feeding from (6 <sup>+</sup> ) parent.                                                                                  |
| 4164.38 25                  | (5,6,7) <sup>#</sup>                | A    |                                                                                                                                                                                                            |
| 4181.21 15                  | (5,6 <sup>+</sup> )                 | A    | J <sup>π</sup> : 2639.9γ to 4 <sup>+</sup> ; β feeding from (6 <sup>+</sup> ) parent.                                                                                                                      |
| 4186.3 4                    | (10 <sup>+</sup> )                  | C    | J <sup>π</sup> : proposed by 1997Ce08 in ( $^{58}\text{Ni}, 2p2\alpha\gamma$ ) based on the 454γ-434γ-979γ cascade from (11 <sup>-</sup> ) to 8 <sup>+</sup> with mult=stretched dipole for 454γ and 434γ. |
| 4221.96 14                  | (5 <sup>+</sup> ,6 <sup>+</sup> )   | A    | J <sup>π</sup> : 2109.5γ to 6 <sup>+</sup> ; 1932.6γ to (4 <sup>+</sup> ); possible allowed β feeding from (6 <sup>+</sup> ) parent.                                                                       |

Continued on next page (footnotes at end of table)

**Adopted Levels, Gammas (continued)** $^{98}\text{Pd}$  Levels (continued)

| E(level) <sup>†</sup>     | J <sup>π</sup> <sup>‡</sup>         | XREF | Comments                                                                                                                                                                               |
|---------------------------|-------------------------------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4265.48 15                | (6 <sup>+</sup> )                   | A    | J <sup>π</sup> : 2723.9γ to 4 <sup>+</sup> , 1491.6γ to 8 <sup>+</sup> ; possible allowed β feeding from (6 <sup>+</sup> ).                                                            |
| 4278.04 17                | (6 <sup>+</sup> ,7)                 | A    | J <sup>π</sup> : 1505.0γ to 8 <sup>+</sup> ; β feeding from (6 <sup>+</sup> ).                                                                                                         |
| 4284.59 15                | (5 <sup>+</sup> ,6 <sup>+</sup> )   | A    | J <sup>π</sup> : 1664.8γ to (5 <sup>-</sup> ); possible allowed β feeding from (6 <sup>+</sup> ).                                                                                      |
| 4291.71 24                |                                     | A    |                                                                                                                                                                                        |
| 4314.74 25                |                                     | A    |                                                                                                                                                                                        |
| 4321.46 15                | (5,6,7) <sup>#</sup>                | A    |                                                                                                                                                                                        |
| 4332.22 16                | (7 <sup>+</sup> )                   | A g  | J <sup>π</sup> : 1559.2γ to 8 <sup>+</sup> and 579.4γ to (9 <sup>+</sup> ); β feeding from (6 <sup>+</sup> ). But (7 <sup>+</sup> ) is inconsistent with 2043.1γ to (4 <sup>+</sup> ). |
| 4353.52 16                | (5,6,7) <sup>#</sup>                | A g  |                                                                                                                                                                                        |
| 4364.3 4                  | (11 <sup>+</sup> )                  | C    | J <sup>π</sup> : proposed by 1997Ce08 in ( $^{58}\text{Ni},2p2\alpha\gamma$ ) based on γ intensity ratio.                                                                              |
| 4373.45 17                |                                     | A    |                                                                                                                                                                                        |
| 4388.49 16                | (7 <sup>+</sup> )                   | A    | J <sup>π</sup> : 635.7γ to (9 <sup>+</sup> ); β feeding from (6 <sup>+</sup> ).                                                                                                        |
| 4406.03 17                | (5,6,7) <sup>#</sup>                | A    |                                                                                                                                                                                        |
| 4410.85 17                | (6 <sup>+</sup> ,7)                 | A    | J <sup>π</sup> : 1637.8γ to 8 <sup>+</sup> ; β feeding from (6 <sup>+</sup> ).                                                                                                         |
| 4412.48 17                | (5,6,7) <sup>#</sup>                | A    |                                                                                                                                                                                        |
| 4417.43 16                | (5,6 <sup>+</sup> )                 | A    | J <sup>π</sup> : 2127.7γ to (4 <sup>+</sup> ); β feeding from (6 <sup>+</sup> ).                                                                                                       |
| 4444.90 25                |                                     | A    |                                                                                                                                                                                        |
| 4446.2 <sup>C</sup> 4     | 12 <sup>+</sup>                     | CD F | J <sup>π</sup> : 801.3γ Q (ΔJ=2) to 10 <sup>+</sup> ; yrast band member.                                                                                                               |
| 4464.33 16                | (5,6 <sup>+</sup> )                 | A    | J <sup>π</sup> : 2923.3γ to 4 <sup>+</sup> ; β feeding from (6 <sup>+</sup> ).                                                                                                         |
| 4500.40 20                | (5,6 <sup>+</sup> )                 | A    | J <sup>π</sup> : 2211.2γ to (4 <sup>+</sup> ); β feeding from (6 <sup>+</sup> ).                                                                                                       |
| 4515.26 19                | (5,6,7) <sup>#</sup>                | A    |                                                                                                                                                                                        |
| 4522.26 22                | (7 <sup>+</sup> )                   | A    | J <sup>π</sup> : 2410.2γ to 6 <sup>+</sup> , 769.5γ to (9 <sup>+</sup> ); β feeding from (6 <sup>+</sup> ).                                                                            |
| 4541.70 25                |                                     | A    |                                                                                                                                                                                        |
| 4542.62 15                | (6 <sup>+</sup> ,7 <sup>+</sup> )   | A    | J <sup>π</sup> : 1769.5γ to 8 <sup>+</sup> ; possible allowed β feeding from (6 <sup>+</sup> ).                                                                                        |
| 4559.44 14                | (5 <sup>+</sup> ,6 <sup>+</sup> )   | A    | J <sup>π</sup> : 3018.8γ to 4 <sup>+</sup> ; possible allowed β feeding from (6 <sup>+</sup> ).                                                                                        |
| 4598.85 17                | (5,6,7) <sup>#</sup>                | A    |                                                                                                                                                                                        |
| 4608.60 17                | (5,6,7) <sup>#</sup>                | A    |                                                                                                                                                                                        |
| 4611.2 5                  | (5,6,7) <sup>#</sup>                | A    |                                                                                                                                                                                        |
| 4615.02 17                | (5,6 <sup>+</sup> )                 | A    | J <sup>π</sup> : 2326.1γ to (4 <sup>+</sup> ); β feeding from (6 <sup>+</sup> ).                                                                                                       |
| 4637.94 16                | (5,6,7) <sup>#</sup>                | A    |                                                                                                                                                                                        |
| 4640.3 <sup>&amp;</sup> 4 | (11 <sup>-</sup> ) <sup>&amp;</sup> | C    | J <sup>π</sup> : 495.6γ (Q) to (9 <sup>-</sup> ), 995.2γ (D) to 10 <sup>+</sup> .                                                                                                      |
| 4664.83 25                |                                     | A    |                                                                                                                                                                                        |
| 4674.8 5                  | (12 <sup>+</sup> )                  | C    | J <sup>π</sup> : proposed in ( $^{58}\text{Ni},2p2\alpha\gamma$ ) based on 310.7γ (D) to (11 <sup>+</sup> ).                                                                           |
| 4691.33 20                | (5,6 <sup>+</sup> )                 | A    | J <sup>π</sup> : 2401.8γ to (4 <sup>+</sup> ); β feeding from (6 <sup>+</sup> ).                                                                                                       |
| 4718.28 15                | (6 <sup>+</sup> ,7)                 | A    | J <sup>π</sup> : 1945.4γ to 8 <sup>+</sup> ; β feeding from (6 <sup>+</sup> ).                                                                                                         |
| 4756.11 17                | (5,6,7) <sup>#</sup>                | A    |                                                                                                                                                                                        |
| 4766.84 16                | (6 <sup>+</sup> ,7)                 | A    | J <sup>π</sup> : 1993.8γ to 8 <sup>+</sup> ; β feeding from (6 <sup>+</sup> ).                                                                                                         |
| 4813.45 25                |                                     | A    |                                                                                                                                                                                        |
| 4845.5 5                  |                                     | A    |                                                                                                                                                                                        |
| 4847.17 14                | (6 <sup>+</sup> ,7 <sup>+</sup> )   | A    | J <sup>π</sup> : 2074.2γ to 8 <sup>+</sup> ; allowed β feeding from (6 <sup>+</sup> ).                                                                                                 |
| 4877.34 23                | (5,6,7) <sup>#</sup>                | A    |                                                                                                                                                                                        |
| 4887.92 24                |                                     | A    |                                                                                                                                                                                        |
| 4891.58 15                | (6 <sup>+</sup> ,7)                 | A    | J <sup>π</sup> : 2118.5γ to (8 <sup>+</sup> ); β feeding from (6 <sup>+</sup> ).                                                                                                       |
| 4918.26 23                | (5,6 <sup>+</sup> )                 | A    | J <sup>π</sup> : 2628.9γ to (4 <sup>+</sup> ); β feeding from (6 <sup>+</sup> ).                                                                                                       |
| 4929.7 4                  |                                     | A    |                                                                                                                                                                                        |
| 4931.0 4                  |                                     | A    |                                                                                                                                                                                        |
| 4960.89 22                | (5,6,7) <sup>#</sup>                | A    |                                                                                                                                                                                        |
| 5009.37 18                | (5,6 <sup>+</sup> )                 | A    | J <sup>π</sup> : 3468.1γ to 4 <sup>+</sup> ; β feeding from (6 <sup>+</sup> ).                                                                                                         |
| 5051.36 15                | (6 <sup>+</sup> )                   | A    | J <sup>π</sup> : 3509.7γ to 4 <sup>+</sup> , 2278.3γ to 8 <sup>+</sup> ; possible allowed β feeding from (6 <sup>+</sup> ).                                                            |
| 5059.62 15                | (5 <sup>+</sup> ,6 <sup>+</sup> )   | A    | J <sup>π</sup> : 3518.1γ to 4 <sup>+</sup> ; possible allowed β feeding from (6 <sup>+</sup> ).                                                                                        |
| 5061.89 17                | (5,6,7) <sup>#</sup>                | A    |                                                                                                                                                                                        |
| 5131.02 19                | (5,6 <sup>+</sup> )                 | A    | J <sup>π</sup> : 2842.4γ to (4 <sup>+</sup> ); β feeding from (6 <sup>+</sup> ).                                                                                                       |

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) $^{98}\text{Pd}$  Levels (continued)

| E(level) <sup>†</sup> | J <sup>π</sup> <sup>‡</sup>                                    | XREF | Comments                                                                                                       |
|-----------------------|----------------------------------------------------------------|------|----------------------------------------------------------------------------------------------------------------|
| 5173.48 15            | (5 <sup>+</sup> ,6 <sup>+</sup> )                              | A    | J <sup>π</sup> : 3632.2γ to 4 <sup>+</sup> ; possible allowed β feeding from (6 <sup>+</sup> ).                |
| 5181.78 23            | (5,6,7) <sup>#</sup>                                           | A    |                                                                                                                |
| 5206.45 18            | (5 <sup>+</sup> ,6 <sup>+</sup> )                              | A    | J <sup>π</sup> : 3665.1γ to 4 <sup>+</sup> ; possible allowed β feeding from (6 <sup>+</sup> ).                |
| 5207.69 19            |                                                                | A    |                                                                                                                |
| 5212.7 4              |                                                                | A    |                                                                                                                |
| 5236.59 16            | (5 <sup>+</sup> ,6 <sup>+</sup> ,7 <sup>+</sup> ) <sup>@</sup> | A    |                                                                                                                |
| 5248.31 19            | (5,6,7) <sup>#</sup>                                           | A    | J <sup>π</sup> : γ to (6 <sup>+</sup> ).                                                                       |
| 5269.0 3              |                                                                | A    |                                                                                                                |
| 5282.85 22            |                                                                | A    |                                                                                                                |
| 5286.74 20            | (5,6,7 <sup>-</sup> )                                          | A    | J <sup>π</sup> : 2666.4γ to (5 <sup>-</sup> ); β feeding from (6 <sup>+</sup> ).                               |
| 5303.96 17            | (5 <sup>+</sup> ,6 <sup>+</sup> )                              | A    | J <sup>π</sup> : 3762.8γ to 4 <sup>+</sup> ; possible allowed β feeding from (6 <sup>+</sup> ).                |
| 5314.11 20            | (6 <sup>+</sup> ,7)                                            | A    | J <sup>π</sup> : 2541.0γ to 8 <sup>+</sup> ; β feeding from (6 <sup>+</sup> ).                                 |
| 5352.4 5              |                                                                | A    |                                                                                                                |
| 5399.66 24            | (5,6,7) <sup>#</sup>                                           | A    |                                                                                                                |
| 5416.86 23            | (5,6,7) <sup>#</sup>                                           | A    |                                                                                                                |
| 5436.2 6              | (5,6 <sup>+</sup> )                                            | A    | J <sup>π</sup> : 3894.9γ to 4 <sup>+</sup> ; β feeding from (6 <sup>+</sup> ).                                 |
| 5450.52 21            | (5,6,7) <sup>#</sup>                                           | A    |                                                                                                                |
| 5463.1 5              | (13 <sup>+</sup> )                                             | C    | J <sup>π</sup> : proposed in ( $^{58}\text{Ni},2p2\alpha\gamma$ ) based on 1017.4γ (D) to (12 <sup>+</sup> ).  |
| 5477.33 18            | (5 <sup>+</sup> ,6 <sup>+</sup> )                              | A    | J <sup>π</sup> : 3936.2γ to 4 <sup>+</sup> ; possible allowed β feeding from (6 <sup>+</sup> ).                |
| 5486.99 16            | (5 <sup>+</sup> ,6 <sup>+</sup> )                              | A    | J <sup>π</sup> : 3946.0γ to 4 <sup>+</sup> ; possible allowed β feeding from (6 <sup>+</sup> ).                |
| 5504.4 8              |                                                                | C    | J <sup>π</sup> : 11 to 13 from 864γ to (11 <sup>-</sup> ).                                                     |
| 5505.5 5              |                                                                | A    | J <sup>π</sup> : 4 <sup>-</sup> to 8 <sup>-</sup> from possible weak β feeding from (6 <sup>+</sup> ).         |
| 5507.39 18            | (5 <sup>+</sup> ,6 <sup>+</sup> ,7 <sup>+</sup> ) <sup>@</sup> | A    |                                                                                                                |
| 5508.8 4              | (5,6 <sup>+</sup> )                                            | A    | J <sup>π</sup> : 2889.0γ to (5 <sup>-</sup> ), 2505.0γ to (4 <sup>+</sup> ); β feeding from (6 <sup>+</sup> ). |
| 5536.27 25            |                                                                | A    |                                                                                                                |
| 5573.8 5              | (5,6 <sup>+</sup> )                                            | A    | J <sup>π</sup> : 4032.5γ to 4 <sup>+</sup> ; possible β feeding from (6 <sup>+</sup> ).                        |
| 5575.1 3              |                                                                | A    |                                                                                                                |
| 5576.6 3              |                                                                | A    |                                                                                                                |
| 5583.3 7              |                                                                | A    |                                                                                                                |
| 5585.1 3              |                                                                | A    |                                                                                                                |
| 5619.6 4              |                                                                | A    |                                                                                                                |
| 5628.0 7              |                                                                | A    |                                                                                                                |
| 5698.9 <sup>C</sup> 4 | 14 <sup>+</sup>                                                | CD   | J <sup>π</sup> : 1252.7γ Q (ΔJ=2) to 12 <sup>+</sup> ; yrast band member.                                      |
| 5706.4 6              |                                                                | A    |                                                                                                                |
| 5708.5 5              |                                                                | A    |                                                                                                                |
| 5716.0 3              |                                                                | A    |                                                                                                                |
| 5717.77 19            | (5 <sup>+</sup> ,6 <sup>+</sup> )                              | A    | J <sup>π</sup> : 4176.5γ to 4 <sup>+</sup> ; possible allowed β feeding from (6 <sup>+</sup> ).                |
| 5722.9 5              |                                                                | A    |                                                                                                                |
| 5734.7 6              | (12 <sup>-</sup> )                                             | C    | J <sup>π</sup> : 1094.5γ (D) to (11 <sup>-</sup> ).                                                            |
| 5755.98 24            | (5 <sup>+</sup> ,6 <sup>+</sup> ,7 <sup>+</sup> ) <sup>@</sup> | A    |                                                                                                                |
| 5778.9 4              |                                                                | A    |                                                                                                                |
| 5814.87 23            | (5 <sup>+</sup> ,6 <sup>+</sup> )                              | A    | J <sup>π</sup> : 4273.5γ to 4 <sup>+</sup> ; possible allowed β feeding from (6 <sup>+</sup> ).                |
| 5817.4 5              |                                                                | A    |                                                                                                                |
| 5833.73 18            | (5 <sup>+</sup> ,6 <sup>+</sup> ,7 <sup>+</sup> ) <sup>@</sup> | A    |                                                                                                                |
| 5845.2 6              |                                                                | A    |                                                                                                                |
| 5852.26 22            | (5 <sup>+</sup> ,6 <sup>+</sup> )                              | A    | J <sup>π</sup> : 4311.0γ to 4 <sup>+</sup> ; possible allowed β feeding from (6 <sup>+</sup> ).                |
| 5857.4 5              | (14 <sup>+</sup> )                                             | C    | J <sup>π</sup> : 1182.9γ (Q) to (12 <sup>+</sup> ), 394.5γ (D) to (13 <sup>+</sup> ).                          |
| 5883.79 19            | (5 <sup>+</sup> ,6 <sup>+</sup> )                              | A    | J <sup>π</sup> : 3593.2γ to (4 <sup>+</sup> ); possible allowed β feeding from (6 <sup>+</sup> ).              |
| 5902.9 8              |                                                                | A    |                                                                                                                |
| 5937.56 18            | (5 <sup>+</sup> ,6 <sup>+</sup> ,7 <sup>+</sup> ) <sup>@</sup> | A    |                                                                                                                |
| 5951.6 7              |                                                                | A    |                                                                                                                |
| 5963.88 17            | (6 <sup>+</sup> ,7 <sup>+</sup> )                              | A    | J <sup>π</sup> : 3190.8γ to 8 <sup>+</sup> ; possible allowed β feeding from (6 <sup>+</sup> ).                |
| 5971.3 4              |                                                                | A    |                                                                                                                |
| 5982.4 5              | (13 <sup>-</sup> )                                             | C    | J <sup>π</sup> : 1342.1g (Q) to (11 <sup>-</sup> ), 247.8γ (D) to (12 <sup>-</sup> ).                          |

Continued on next page (footnotes at end of table)

**Adopted Levels, Gammas (continued)** $^{98}\text{Pd}$  Levels (continued)

| E(level) <sup>†</sup> | $J^\pi$ <sup>‡</sup>              | XREF | Comments                                                                                                                                                     |
|-----------------------|-----------------------------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5982.45 24            | (5,6 <sup>+</sup> )               | A    | $J^\pi$ : 4440.8 $\gamma$ to 4 <sup>+</sup> ; possible $\beta$ feeding from (6 <sup>+</sup> ).                                                               |
| 5999.58 23            | (5 <sup>+</sup> ,6 <sup>+</sup> ) | A    | $J^\pi$ : 4458.4 $\gamma$ to 4 <sup>+</sup> ; possible allowed $\beta$ feeding from (6 <sup>+</sup> ).                                                       |
| 6047.28 25            | (5 <sup>+</sup> ,6 <sup>+</sup> ) | A    | $J^\pi$ : 3757.5 $\gamma$ to (4 <sup>+</sup> ); possible allowed $\beta$ feeding from (6 <sup>+</sup> ).                                                     |
| 6062.0 5              |                                   | A    |                                                                                                                                                              |
| 6085.0 5              |                                   | A    |                                                                                                                                                              |
| 6097.1 3              |                                   | A    |                                                                                                                                                              |
| 6108.4 7              |                                   | A    |                                                                                                                                                              |
| 6141.0 5              |                                   | A    |                                                                                                                                                              |
| 6143.1 5              |                                   | A    |                                                                                                                                                              |
| 6186.8 5              |                                   | A    |                                                                                                                                                              |
| 6200.0 4              |                                   | A    |                                                                                                                                                              |
| 6230.4 8              |                                   | A    |                                                                                                                                                              |
| 6262.6 3              | (5 <sup>+</sup> ,6 <sup>+</sup> ) | A    | $J^\pi$ : 4721.0 $\gamma$ to 4 <sup>+</sup> ; possible allowed $\beta$ feeding from (6 <sup>+</sup> ).                                                       |
| 6315.9 4              |                                   | A    |                                                                                                                                                              |
| 6319.2 7              | (14)                              | C    | $J^\pi$ : proposed in ( $^{58}\text{Ni},2\text{p}2\alpha\gamma$ ) based on 226.9 $\gamma$ (D) to (13 <sup>-</sup> ).                                         |
| 6350.3 6              |                                   | A    |                                                                                                                                                              |
| 6424.1 7              |                                   | A    |                                                                                                                                                              |
| 6450.0 7              |                                   | A    |                                                                                                                                                              |
| 6625.5 5              | (15 <sup>+</sup> )                | C    | $J^\pi$ : proposed in ( $^{58}\text{Ni},2\text{p}2\alpha\gamma$ ) based on 925.9 $\gamma$ (D) to 14 <sup>+</sup> , 768.7 $\gamma$ (D) to (14 <sup>+</sup> ). |
| 6748.5 <sup>C</sup> 5 | (16 <sup>+</sup> )                | C    | $J^\pi$ : 1049.2 $\gamma$ (Q) to 14 <sup>+</sup> ; 123.0 $\gamma$ (D) to (15 <sup>+</sup> ); possible yrast band member.                                     |
| 6801.7 5              | (15 <sup>+</sup> )                | C    | $J^\pi$ : proposed in ( $^{58}\text{Ni},2\text{p}2\alpha\gamma$ ) based on 1103.1 $\gamma$ (D) to 14 <sup>+</sup> .                                          |
| 7157.5 7              | (15)                              | C    | $J^\pi$ : proposed in ( $^{58}\text{Ni},2\text{p}2\alpha\gamma$ ) based on 838.5 $\gamma$ (D) to (14).                                                       |
| 7231.9 8              | (15)                              | C    | $J^\pi$ : proposed in ( $^{58}\text{Ni},2\text{p}2\alpha\gamma$ ) based on 912.7 $\gamma$ (D) to (14).                                                       |
| 7346.3 5              | (16 <sup>+</sup> )                | C    | $J^\pi$ : 1647.5 $\gamma$ (Q) to 14 <sup>+</sup> ; 545 $\gamma$ and 720.5 $\gamma$ to (15 <sup>+</sup> ).                                                    |
| 7865.1 9              |                                   | C    |                                                                                                                                                              |
| 8339.9 9              | (17 <sup>+</sup> )                | C    | $J^\pi$ : proposed by 1997Ce08 in ( $^{58}\text{Ni},2\text{p}2\alpha\gamma$ ).                                                                               |
| 8506.4 7              | (18 <sup>+</sup> )                | C    | $J^\pi$ : 1160.3 $\gamma$ (Q) to (16 <sup>+</sup> ), 166 $\gamma$ to (17 <sup>+</sup> ).                                                                     |
| 8612.8 7              |                                   | C    |                                                                                                                                                              |
| 9134.9 13             |                                   | C    |                                                                                                                                                              |
| 10862.9 16            |                                   | C    |                                                                                                                                                              |

<sup>†</sup> From a least-squares fit to  $\gamma$ -ray energies, assuming  $\Delta E_\gamma=1$  keV for integer  $E_\gamma$  values and 0.5 keV otherwise if not given, unless otherwise noted.

<sup>‡</sup> For weak  $\beta$  feedings (<0.5% or so), possible  $J^\pi$  values from log  $ft$  alone, include those for first-forbidden unique transitions. For levels populated in heavy-ion  $\gamma$ -ray studies, ascending spins are assumed, consistent with yrast pattern of feedings of states in such reactions. In addition, same parity is assumed for levels in a cascade or a sequence.

# (5,6,7) suggested from  $\varepsilon+\beta^+$  feeding from (6<sup>+</sup>), when log  $ft>5.9$  from (6<sup>+</sup>) parent state.

@ (5<sup>+</sup>,6<sup>+</sup>,7<sup>+</sup>) suggested from possible allowed  $\varepsilon+\beta^+$  feeding (log  $ft<5.9$ ) from (6<sup>+</sup>) parent state.

& Possible member of  $\pi(g_{9/2}^-)\pi(p_{1/2}^-)$  (1997Ce08).

<sup>a</sup> Proposed by 2009FrZZ in  $^{92}\text{Mo}(^{10}\text{B},3\text{npy})$  and considered as tentative as no details about  $\gamma$  deexcitations are available.

<sup>b</sup> From  $^{92}\text{Mo}(^{10}\text{B},3\text{npy})$  using RDDS for excited states (2009FrZZ), unless otherwise noted. Values from 2009FrZZ are considered as preliminary.

<sup>c</sup> Band(A): Yrast cascade. Probable g.s. band identified through a cascade of  $\Delta J=2$ , quadrupole (most likely E2) transitions from  $\gamma(\theta)$  data in (HI,xny). Known lifetimes for levels up to 8<sup>+</sup> suggest E2 for  $\gamma$  transitions from these levels.

Adopted Levels, Gammas (continued)

| E <sub>i</sub> (level) | J <sup>π</sup> <sub>i</sub> | γ( <sup>98</sup> Pd)        |                             | E <sub>f</sub> | J <sup>π</sup> <sub>f</sub> | Mult.#  | δ        | α@      | Comments                                                                                                                                                                                                                                                                        |
|------------------------|-----------------------------|-----------------------------|-----------------------------|----------------|-----------------------------|---------|----------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                        |                             | E <sub>γ</sub> <sup>†</sup> | I <sub>γ</sub> <sup>†</sup> |                |                             |         |          |         |                                                                                                                                                                                                                                                                                 |
| 862.69                 | 2 <sup>+</sup>              | 862.69 11                   | 100                         | 0.0            | 0 <sup>+</sup>              | E2      |          | 0.0014  | B(E2)(W.u.)>3.9<br>E <sub>γ</sub> : weighted average of 862.8 1 from <sup>98</sup> Ag ε decay (47.5 s),<br>862.48 14 from ( <sup>32</sup> S,2p2nγ), and 862.6 3 from (α,2nγ).<br>Mult.: Q from γ(θ) in ( <sup>32</sup> S,2p2nγ) and (α,2nγ) and M2<br>ruled out by RUL.         |
| 1541.24                | 4 <sup>+</sup>              | 678.5 1                     | 100                         | 862.69         | 2 <sup>+</sup>              | E2      |          | 0.00258 | B(E2)(W.u.)=12.6 +27-19<br>E <sub>γ</sub> : weighted average of 678.5 1 from <sup>98</sup> Ag ε decay (47.5 s),<br>678.3 6 from ( <sup>32</sup> S,2p2nγ), and 678.3 3 from (α,2nγ).<br>Mult.,δ: from γγ(θ) in <sup>92</sup> Mo( <sup>10</sup> B,3npγ) (2009FrZZ).               |
| 1966.02                | (2 <sup>+</sup> )           | 1103.2 1                    | 100                         | 862.69         | 2 <sup>+</sup>              | (M1+E2) | -0.26 10 | 0.0041  | B(E2)(W.u.)=18.0 +14-12<br>E <sub>γ</sub> : weighted average of 571.0 1 from <sup>98</sup> Ag ε decay (47.5 s),<br>570.91 10 from ( <sup>32</sup> S,2p2nγ), and 570.6 3 from (α,2nγ).<br>Mult.: Q from γ(θ) in ( <sup>32</sup> S,2p2nγ) and (α,2nγ) and M2<br>ruled out by RUL. |
| 2112.30                | 6 <sup>+</sup>              | 570.94 10                   | 100                         | 1541.24        | 4 <sup>+</sup>              | E2      |          |         |                                                                                                                                                                                                                                                                                 |
| 2222.2                 | (2 <sup>+</sup> )           | 1359.5                      | 100                         | 862.69         | 2 <sup>+</sup>              | (M1+E2) | +0.15 9  |         | E <sub>γ</sub> : from level-energy difference.<br>δ: from γγ(θ) in <sup>92</sup> Mo( <sup>10</sup> B,3npγ) (2009FrZZ) for<br>J(2222)=2.                                                                                                                                         |
|                        |                             | 2222.2 <sup>a</sup>         | <8.1                        | 0.0            | 0 <sup>+</sup>              | [E2]    |          |         | E <sub>γ</sub> : from level-energy difference.<br>I <sub>γ</sub> : <8.1% of the intensity of γ to the first 2 <sup>+</sup> state<br>(2009FrZZ).                                                                                                                                 |
| 2289.29                | (4 <sup>+</sup> )           | 1426.6 1                    | 100                         | 862.69         | 2 <sup>+</sup>              |         |          |         |                                                                                                                                                                                                                                                                                 |
| 2407.83                | (4,5,6 <sup>+</sup> )       | 866.7 1                     | 100                         | 1541.24        | 4 <sup>+</sup>              |         |          |         |                                                                                                                                                                                                                                                                                 |
| 2564.13                | (5,6 <sup>+</sup> )         | 451.8 1                     | 100 7                       | 2112.30        | 6 <sup>+</sup>              |         |          |         |                                                                                                                                                                                                                                                                                 |
|                        |                             | 1022.9 1                    | 8.3 6                       | 1541.24        | 4 <sup>+</sup>              |         |          |         |                                                                                                                                                                                                                                                                                 |
| 2616.87                | (5,6 <sup>+</sup> )         | 209.1 2                     | 6.0 10                      | 2407.83        | (4,5,6 <sup>+</sup> )       |         |          |         |                                                                                                                                                                                                                                                                                 |
|                        |                             | 1075.6 1                    | 100 7                       | 1541.24        | 4 <sup>+</sup>              |         |          |         |                                                                                                                                                                                                                                                                                 |
| 2619.96                | (5 <sup>-</sup> )           | 1078.7 1                    | 100                         | 1541.24        | 4 <sup>+</sup>              | (D)     |          |         |                                                                                                                                                                                                                                                                                 |
| 2724.37                | (5,6 <sup>+</sup> )         | 160.1 1                     | 4.0 3                       | 2564.13        | (5,6 <sup>+</sup> )         |         |          |         |                                                                                                                                                                                                                                                                                 |
|                        |                             | 435.1 1                     | 1.4 1                       | 2289.29        | (4 <sup>+</sup> )           |         |          |         |                                                                                                                                                                                                                                                                                 |
|                        |                             | 612.0 1                     | 100 7                       | 2112.30        | 6 <sup>+</sup>              |         |          |         |                                                                                                                                                                                                                                                                                 |
|                        |                             | 1183.0 1                    | 51 4                        | 1541.24        | 4 <sup>+</sup>              |         |          |         |                                                                                                                                                                                                                                                                                 |
| 2766.94                | (4 <sup>+</sup> )           | 800.8 1                     | 50 3                        | 1966.02        | (2 <sup>+</sup> )           |         |          |         |                                                                                                                                                                                                                                                                                 |
|                        |                             | 1904.7 2                    | 100 10                      | 862.69         | 2 <sup>+</sup>              |         |          |         |                                                                                                                                                                                                                                                                                 |
| 2773.03                | 8 <sup>+</sup>              | 660.64 10                   | 100                         | 2112.30        | 6 <sup>+</sup>              | E2      |          | 0.0028  | B(E2)(W.u.)=2.54 5<br>E <sub>γ</sub> : weighted average of 660.7 1 from <sup>98</sup> Ag ε decay (47.5 s),<br>660.41 24 from ( <sup>32</sup> S,2p2nγ), and 660.5 3 from (α,2nγ).<br>Mult.: Q from γ(θ) in ( <sup>32</sup> S,2p2nγ) and (α,2nγ) and M2<br>ruled out by RUL.      |
| 2784.00                | (4,5,6 <sup>+</sup> )       | 494.7 1                     | 100                         | 2289.29        | (4 <sup>+</sup> )           |         |          |         |                                                                                                                                                                                                                                                                                 |
| 3003.59                | (4 <sup>+</sup> )           | 1462.3 2                    | 100 12                      | 1541.24        | 4 <sup>+</sup>              |         |          |         |                                                                                                                                                                                                                                                                                 |
|                        |                             | 2140.8 4                    | 38 8                        | 862.69         | 2 <sup>+</sup>              |         |          |         |                                                                                                                                                                                                                                                                                 |
| 3008.89                | (5,6 <sup>+</sup> )         | 719.5 1                     | 11.3 10                     | 2289.29        | (4 <sup>+</sup> )           |         |          |         |                                                                                                                                                                                                                                                                                 |

Adopted Levels, Gammas (continued)

$\gamma(^{98}\text{Pd})$  (continued)

| $E_i(\text{level})$ | $J_i^\pi$                           | $E_\gamma$ † | $I_\gamma$ † | $E_f$   | $J_f^\pi$                           | Mult. # | Comments                                                                         |
|---------------------|-------------------------------------|--------------|--------------|---------|-------------------------------------|---------|----------------------------------------------------------------------------------|
| 3008.89             | (5,6 <sup>+</sup> )                 | 896.6 2      | 5.8 7        | 2112.30 | 6 <sup>+</sup>                      |         |                                                                                  |
|                     |                                     | 1467.5 1     | 100 7        | 1541.24 | 4 <sup>+</sup>                      |         |                                                                                  |
| 3021.61             |                                     | 909.3 2      | 100          | 2112.30 | 6 <sup>+</sup>                      |         |                                                                                  |
| 3076.39             | (6 <sup>+</sup> ,7)                 | 303.3 1      | 74 4         | 2773.03 | 8 <sup>+</sup>                      |         |                                                                                  |
|                     |                                     | 352.0 1      | 100 9        | 2724.37 | (5,6 <sup>+</sup> )                 |         |                                                                                  |
|                     |                                     | 963.9 1      | 74 4         | 2112.30 | 6 <sup>+</sup>                      |         |                                                                                  |
| 3091.40             | (4,5,6 <sup>+</sup> )               | 802.1 1      | 26.6 16      | 2289.29 | (4 <sup>+</sup> )                   |         |                                                                                  |
|                     |                                     | 1549.7 ‡ 1   | 100 11       | 1541.24 | 4 <sup>+</sup>                      |         | E <sub>γ</sub> : level-energy difference=1550.15.                                |
| 3117.51             |                                     | 1005.2 2     | 100          | 2112.30 | 6 <sup>+</sup>                      |         |                                                                                  |
| 3125.13             | (5 <sup>+</sup> ,6 <sup>+</sup> )   | 560.9 1      | 12.8 10      | 2564.13 | (5,6 <sup>+</sup> )                 |         |                                                                                  |
|                     |                                     | 717.5 1      | 3.3 3        | 2407.83 | (4,5,6 <sup>+</sup> )               |         |                                                                                  |
|                     |                                     | 835.7 1      | 4.5 5        | 2289.29 | (4 <sup>+</sup> )                   |         |                                                                                  |
|                     |                                     | 1012.7 1     | 78 5         | 2112.30 | 6 <sup>+</sup>                      |         |                                                                                  |
|                     |                                     | 1583.7 1     | 100 8        | 1541.24 | 4 <sup>+</sup>                      |         |                                                                                  |
| 3172.97             |                                     | 553.0 1      | 100          | 2619.96 | (5 <sup>-</sup> )                   |         |                                                                                  |
| 3219.30             | (6 <sup>+</sup> ,7,8 <sup>+</sup> ) | 446.2 1      | 100 6        | 2773.03 | 8 <sup>+</sup>                      |         |                                                                                  |
|                     |                                     | 1106.8 1     | 100 6        | 2112.30 | 6 <sup>+</sup>                      |         |                                                                                  |
| 3345.15             | (5,6 <sup>+</sup> )                 | 620.9 1      | 28.8 25      | 2724.37 | (5,6 <sup>+</sup> )                 |         |                                                                                  |
|                     |                                     | 781.0 1      | 100 6        | 2564.13 | (5,6 <sup>+</sup> )                 |         |                                                                                  |
|                     |                                     | 937.3 3      | 3.0 5        | 2407.83 | (4,5,6 <sup>+</sup> )               |         |                                                                                  |
|                     |                                     | 1055.7 2     | 5.6 6        | 2289.29 | (4 <sup>+</sup> )                   |         |                                                                                  |
|                     |                                     | 1803.8 1     | 73 6         | 1541.24 | 4 <sup>+</sup>                      |         |                                                                                  |
| 3347.83             | (4 <sup>+</sup> )                   | 1381.8 2     | 100          | 1966.02 | (2 <sup>+</sup> )                   |         |                                                                                  |
| 3349.16             |                                     | 941.3 2      | 100 11       | 2407.83 | (4,5,6 <sup>+</sup> )               |         |                                                                                  |
|                     |                                     | 1059.9 2     | 32 5         | 2289.29 | (4 <sup>+</sup> )                   |         |                                                                                  |
| 3378.36             | (7 <sup>-</sup> )                   | 758.4 1      | 100          | 2619.96 | (5 <sup>-</sup> )                   | (Q)     | Mult.: from $\gamma$ intensity ratio in ( <sup>58</sup> Ni,2p2 $\alpha\gamma$ ). |
| 3401.50             | (4 <sup>+</sup> )                   | 1112.2 1     | 70 7         | 2289.29 | (4 <sup>+</sup> )                   |         |                                                                                  |
|                     |                                     | 2539.2 4     | 100 17       | 862.69  | 2 <sup>+</sup>                      |         |                                                                                  |
| 3440.64             | (5,6 <sup>+</sup> )                 | 1032.7 2     | 2.7 3        | 2407.83 | (4,5,6 <sup>+</sup> )               |         |                                                                                  |
|                     |                                     | 1328.3 1     | 100 10       | 2112.30 | 6 <sup>+</sup>                      |         |                                                                                  |
|                     |                                     | 1899.4 1     | 86 5         | 1541.24 | 4 <sup>+</sup>                      |         |                                                                                  |
| 3488.83             | (6 <sup>+</sup> ,7,8)               | 715.8 2      | 100          | 2773.03 | 8 <sup>+</sup>                      |         |                                                                                  |
| 3553.18             | (4 <sup>+</sup> )                   | 1145.0 2     | 100 8        | 2407.83 | (4,5,6 <sup>+</sup> )               |         |                                                                                  |
|                     |                                     | 1263.7 1     | 46 4         | 2289.29 | (4 <sup>+</sup> )                   |         |                                                                                  |
|                     |                                     | 2690.5 3     | 58 8         | 862.69  | 2 <sup>+</sup>                      |         |                                                                                  |
| 3582.6              |                                     | 1293.3 3     | 100          | 2289.29 | (4 <sup>+</sup> )                   |         |                                                                                  |
| 3601.55             | (5,6 <sup>+</sup> )                 | 1037.3 1     | 100 6        | 2564.13 | (5,6 <sup>+</sup> )                 |         |                                                                                  |
|                     |                                     | 1312.3 2     | 4.4 6        | 2289.29 | (4 <sup>+</sup> )                   |         |                                                                                  |
|                     |                                     | 1489.3 1     | 20.0 17      | 2112.30 | 6 <sup>+</sup>                      |         |                                                                                  |
|                     |                                     | 2060.3 2     | 15.6 17      | 1541.24 | 4 <sup>+</sup>                      |         |                                                                                  |
| 3633.30             | (5,6,7)                             | 414.1 1      | 100 7        | 3219.30 | (6 <sup>+</sup> ,7,8 <sup>+</sup> ) |         |                                                                                  |
|                     |                                     | 1069.0 1     | 29.1 18      | 2564.13 | (5,6 <sup>+</sup> )                 |         |                                                                                  |
|                     |                                     | 1521.5 ‡ 1   | 76 6         | 2112.30 | 6 <sup>+</sup>                      |         | E <sub>γ</sub> : level-energy difference=1520.98.                                |

Adopted Levels, Gammas (continued)

| <u><math>\gamma(^{98}\text{Pd})</math> (continued)</u>                                                                                                                                                                                                       |                             |                              |                              |                         |                                     |                                                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------------------|------------------------------|-------------------------|-------------------------------------|---------------------------------------------------|
| <u><math>E_i(\text{level})</math></u>                                                                                                                                                                                                                        | <u><math>J_i^\pi</math></u> | <u><math>E_\gamma</math></u> | <u><math>I_\gamma</math></u> | <u><math>E_f</math></u> | <u><math>J_f^\pi</math></u>         | <u>Mult.#</u>                                     |
| <u>Comments</u>                                                                                                                                                                                                                                              |                             |                              |                              |                         |                                     |                                                   |
| 3644.49                                                                                                                                                                                                                                                      | 10 <sup>+</sup>             | 871.40 14                    | 100                          | 2773.03                 | 8 <sup>+</sup>                      | Q                                                 |
| E <sub>γ</sub> : weighted average of 871.36 14 from ( <sup>32</sup> S,2p2nγ) and 871.6 3 from (α,2nγ).<br>Mult.: from γ(θ) in (α,2nγ).                                                                                                                       |                             |                              |                              |                         |                                     |                                                   |
| 3708.75                                                                                                                                                                                                                                                      | (4,5,6 <sup>+</sup> )       | 1091.7 2                     | 50 8                         | 2616.87                 | (5,6 <sup>+</sup> )                 |                                                   |
|                                                                                                                                                                                                                                                              |                             | 1419.5 1                     | 100 8                        | 2289.29                 | (4 <sup>+</sup> )                   |                                                   |
| 3739.83                                                                                                                                                                                                                                                      |                             | 1332.0 2                     | 100                          | 2407.83                 | (4,5,6 <sup>+</sup> )               |                                                   |
| 3752.64                                                                                                                                                                                                                                                      | (9 <sup>+</sup> )           | 979.4 1                      | 100                          | 2773.03                 | 8 <sup>+</sup>                      | D+Q                                               |
| Mult.: intensity ratio in ( <sup>58</sup> Ni,2p2αγ) (1997Ce08) indicates likely mult=stretched quadrupole, but a mixed D+Q is required by the 454γ-434γ-979γ cascade from (11 <sup>-</sup> ) to 8 <sup>+</sup> with mult=stretched dipole for 454γ and 434γ. |                             |                              |                              |                         |                                     |                                                   |
| 3759.66                                                                                                                                                                                                                                                      | (5,6,7)                     | 1195.8 1                     | 50 4                         | 2564.13                 | (5,6 <sup>+</sup> )                 |                                                   |
|                                                                                                                                                                                                                                                              |                             | 1351.6 2                     | 15.8 20                      | 2407.83                 | (4,5,6 <sup>+</sup> )               |                                                   |
|                                                                                                                                                                                                                                                              |                             | 1647.2 1                     | 100 8                        | 2112.30                 | 6 <sup>+</sup>                      |                                                   |
| 3763.27                                                                                                                                                                                                                                                      | (5,6,7)                     | 686.9 1                      | 9.5 10                       | 3076.39                 | (6 <sup>+</sup> ,7)                 |                                                   |
|                                                                                                                                                                                                                                                              |                             | 1651.0 1                     | 100 5                        | 2112.30                 | 6 <sup>+</sup>                      |                                                   |
| 3816.38                                                                                                                                                                                                                                                      | (5,6,7)                     | 807.5 1                      | 100 9                        | 3008.89                 | (5,6 <sup>+</sup> )                 |                                                   |
|                                                                                                                                                                                                                                                              |                             | 1408.5 2                     | 18.3 19                      | 2407.83                 | (4,5,6 <sup>+</sup> )               |                                                   |
| 3852.93                                                                                                                                                                                                                                                      | (5,6 <sup>+</sup> )         | 251.4 1                      | 27.5 25                      | 3601.55                 | (5,6 <sup>+</sup> )                 |                                                   |
|                                                                                                                                                                                                                                                              |                             | 1128.4 1                     | 65 5                         | 2724.37                 | (5,6 <sup>+</sup> )                 |                                                   |
|                                                                                                                                                                                                                                                              |                             | 1236.2 1                     | 75 8                         | 2616.87                 | (5,6 <sup>+</sup> )                 |                                                   |
|                                                                                                                                                                                                                                                              |                             | 1288.9 1                     | 88 8                         | 2564.13                 | (5,6 <sup>+</sup> )                 |                                                   |
|                                                                                                                                                                                                                                                              |                             | 1445.4 2                     | 43 5                         | 2407.83                 | (4,5,6 <sup>+</sup> )               |                                                   |
|                                                                                                                                                                                                                                                              |                             | 1563.4 2                     | 16.5 23                      | 2289.29                 | (4 <sup>+</sup> )                   |                                                   |
|                                                                                                                                                                                                                                                              |                             | 1740.4 1                     | 98 10                        | 2112.30                 | 6 <sup>+</sup>                      |                                                   |
|                                                                                                                                                                                                                                                              |                             | 2311.6 2                     | 100 10                       | 1541.24                 | 4 <sup>+</sup>                      |                                                   |
| 3893.67                                                                                                                                                                                                                                                      |                             | 1273.7 1                     | 100                          | 2619.96                 | (5 <sup>-</sup> )                   |                                                   |
| 3905.33                                                                                                                                                                                                                                                      | (5,6,7)                     | 829.0 1                      | 24.0 20                      | 3076.39                 | (6 <sup>+</sup> ,7)                 |                                                   |
|                                                                                                                                                                                                                                                              |                             | 1180.8 1                     | 100 7                        | 2724.37                 | (5,6 <sup>+</sup> )                 |                                                   |
| 3927.98                                                                                                                                                                                                                                                      |                             | 1311.1 2                     | 100                          | 2616.87                 | (5,6 <sup>+</sup> )                 |                                                   |
| 3950.99                                                                                                                                                                                                                                                      | (5,6,7)                     | 731.6 1                      | 100 9                        | 3219.30                 | (6 <sup>+</sup> ,7,8 <sup>+</sup> ) |                                                   |
|                                                                                                                                                                                                                                                              |                             | 874.6 1                      | 49 5                         | 3076.39                 | (6 <sup>+</sup> ,7)                 |                                                   |
| 3965.15                                                                                                                                                                                                                                                      | (5,6,7)                     | 956.1 1                      | 33 4                         | 3008.89                 | (5,6 <sup>+</sup> )                 |                                                   |
|                                                                                                                                                                                                                                                              |                             | 1241.1 3                     | 18.8 21                      | 2724.37                 | (5,6 <sup>+</sup> )                 |                                                   |
|                                                                                                                                                                                                                                                              |                             | 1400.9 1                     | 48 4                         | 2564.13                 | (5,6 <sup>+</sup> )                 |                                                   |
|                                                                                                                                                                                                                                                              |                             | 1853.1 1                     | 100 19                       | 2112.30                 | 6 <sup>+</sup>                      |                                                   |
| 3969.28                                                                                                                                                                                                                                                      | (5,6 <sup>+</sup> )         | 416.0 1                      | 33.3 21                      | 3553.18                 | (4 <sup>+</sup> )                   |                                                   |
|                                                                                                                                                                                                                                                              |                             | 844.0 1                      | 42 4                         | 3125.13                 | (5 <sup>+</sup> ,6 <sup>+</sup> )   |                                                   |
|                                                                                                                                                                                                                                                              |                             | 960.0 2                      | 14.6 21                      | 3008.89                 | (5,6 <sup>+</sup> )                 |                                                   |
|                                                                                                                                                                                                                                                              |                             | 1244.7 2                     | 29.2 21                      | 2724.37                 | (5,6 <sup>+</sup> )                 |                                                   |
|                                                                                                                                                                                                                                                              |                             | 1351.8 <sup>‡</sup> 2        | 18.8 21                      | 2616.87                 | (5,6 <sup>+</sup> )                 | E <sub>γ</sub> : level-energy difference=1352.40. |
|                                                                                                                                                                                                                                                              |                             | 1679.8 2                     | 20.8 21                      | 2289.29                 | (4 <sup>+</sup> )                   |                                                   |
|                                                                                                                                                                                                                                                              |                             | 2428.6 <sup>‡</sup> 1        | 100 15                       | 1541.24                 | 4 <sup>+</sup>                      | E <sub>γ</sub> : level-energy difference=2428.01. |
| 3976.29                                                                                                                                                                                                                                                      | (6 <sup>+</sup> ,7)         | 756.8 1                      | 29.8 24                      | 3219.30                 | (6 <sup>+</sup> ,7,8 <sup>+</sup> ) |                                                   |
|                                                                                                                                                                                                                                                              |                             | 1203.5 1                     | 26.2 24                      | 2773.03                 | 8 <sup>+</sup>                      |                                                   |
|                                                                                                                                                                                                                                                              |                             | 1412.1 1                     | 21.4 24                      | 2564.13                 | (5,6 <sup>+</sup> )                 |                                                   |

**Adopted Levels, Gammas (continued)**

$\gamma(^{98}\text{Pd})$  (continued)

| $E_i(\text{level})$ | $J_i^\pi$                         | $E_\gamma^\dagger$ | $I_\gamma^\dagger$ | $E_f$   | $J_f^\pi$                           | Mult. <sup>#</sup> | Comments                                                                                                                                                                                         |
|---------------------|-----------------------------------|--------------------|--------------------|---------|-------------------------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3976.29             | (6 <sup>+</sup> ,7)               | 1863.9 1           | 100 7              | 2112.30 | 6 <sup>+</sup>                      |                    |                                                                                                                                                                                                  |
| 3988.1              | (10 <sup>+</sup> )                | 343.8              | 100                | 3644.49 | 10 <sup>+</sup>                     |                    | $E_\gamma$ : from ( <sup>58</sup> Ni,2p2 $\alpha\gamma$ ).<br>Mult.: 1997Ce08 in ( <sup>58</sup> Ni,2p2 $\alpha\gamma$ ) propose that it may be a non-stretched dipole based on intensity ratio. |
| 3991.8              |                                   | 1371.8 2           | 100                | 2619.96 | (5 <sup>-</sup> )                   |                    |                                                                                                                                                                                                  |
| 4050.49             | (6 <sup>+</sup> ,7)               | 831.4 2            | 15.4 15            | 3219.30 | (6 <sup>+</sup> ,7,8 <sup>+</sup> ) |                    |                                                                                                                                                                                                  |
|                     |                                   | 974.2 1            | 100 8              | 3076.39 | (6 <sup>+</sup> ,7)                 |                    |                                                                                                                                                                                                  |
|                     |                                   | 1277.3 1           | 23.1 15            | 2773.03 | 8 <sup>+</sup>                      |                    |                                                                                                                                                                                                  |
| 4081.63             | (5,6,7)                           | 736.6 1            | 22 3               | 3345.15 | (5,6 <sup>+</sup> )                 |                    |                                                                                                                                                                                                  |
|                     |                                   | 1969.4 1           | 100 9              | 2112.30 | 6 <sup>+</sup>                      |                    |                                                                                                                                                                                                  |
| 4090.60             | (5,6,7)                           | 1473.9 2           | 54 8               | 2616.87 | (5,6 <sup>+</sup> )                 |                    |                                                                                                                                                                                                  |
|                     |                                   | 1526.5 1           | 100 8              | 2564.13 | (5,6 <sup>+</sup> )                 |                    |                                                                                                                                                                                                  |
|                     |                                   | 1682.4 2           | 41 5               | 2407.83 | (4,5,6 <sup>+</sup> )               |                    |                                                                                                                                                                                                  |
| 4092.1              | (4,5,6 <sup>+</sup> )             | 2550.8 3           | 100                | 1541.24 | 4 <sup>+</sup>                      |                    |                                                                                                                                                                                                  |
| 4105.24             |                                   | 1541.1 2           | 100                | 2564.13 | (5,6 <sup>+</sup> )                 |                    |                                                                                                                                                                                                  |
| 4124.54             | (5,6 <sup>+</sup> )               | 1507.5 2           | 100 13             | 2616.87 | (5,6 <sup>+</sup> )                 |                    |                                                                                                                                                                                                  |
|                     |                                   | 1835.6 3           | 69 10              | 2289.29 | (4 <sup>+</sup> )                   |                    |                                                                                                                                                                                                  |
| 4136.2              |                                   | 1572.1 3           | 100                | 2564.13 | (5,6 <sup>+</sup> )                 |                    |                                                                                                                                                                                                  |
| 4145.1              | (9 <sup>-</sup> )                 | 767.0              | 100                | 3378.36 | (7 <sup>-</sup> )                   | (Q)                | $E_\gamma$ ,Mult.: from ( <sup>58</sup> Ni,2p2 $\alpha\gamma$ ).                                                                                                                                 |
| 4152.58             | (6 <sup>+</sup> ,7 <sup>+</sup> ) | 393.1 2            | 6.4 7              | 3759.66 | (5,6,7)                             |                    |                                                                                                                                                                                                  |
|                     |                                   | 519.1 2            | 7.1 14             | 3633.30 | (5,6,7)                             |                    |                                                                                                                                                                                                  |
|                     |                                   | 551.1 1            | 36 3               | 3601.55 | (5,6 <sup>+</sup> )                 |                    |                                                                                                                                                                                                  |
|                     |                                   | 933.4 1            | 59 4               | 3219.30 | (6 <sup>+</sup> ,7,8 <sup>+</sup> ) |                    |                                                                                                                                                                                                  |
|                     |                                   | 1027.3 1           | 20.7 21            | 3125.13 | (5 <sup>+</sup> ,6 <sup>+</sup> )   |                    |                                                                                                                                                                                                  |
|                     |                                   | 1076.1 1           | 17.1 21            | 3076.39 | (6 <sup>+</sup> ,7)                 |                    |                                                                                                                                                                                                  |
|                     |                                   | 1379.6 1           | 100 7              | 2773.03 | 8 <sup>+</sup>                      |                    |                                                                                                                                                                                                  |
|                     |                                   | 1428.0 2           | 9.3 7              | 2724.37 | (5,6 <sup>+</sup> )                 |                    |                                                                                                                                                                                                  |
|                     |                                   | 1588.4 1           | 16.4 14            | 2564.13 | (5,6 <sup>+</sup> )                 |                    |                                                                                                                                                                                                  |
|                     |                                   | 2040.3 1           | 50 4               | 2112.30 | 6 <sup>+</sup>                      |                    |                                                                                                                                                                                                  |
| 4164.38             | (5,6,7)                           | 1547.5 2           | 100                | 2616.87 | (5,6 <sup>+</sup> )                 |                    |                                                                                                                                                                                                  |
| 4181.21             | (5,6 <sup>+</sup> )               | 740.2 2            | 40 5               | 3440.64 | (5,6 <sup>+</sup> )                 |                    |                                                                                                                                                                                                  |
|                     |                                   | 1056.1 1           | 95 10              | 3125.13 | (5 <sup>+</sup> ,6 <sup>+</sup> )   |                    |                                                                                                                                                                                                  |
|                     |                                   | 1172.1 2           | 35 5               | 3008.89 | (5,6 <sup>+</sup> )                 |                    |                                                                                                                                                                                                  |
|                     |                                   | 1457.0 2           | 40 5               | 2724.37 | (5,6 <sup>+</sup> )                 |                    |                                                                                                                                                                                                  |
|                     |                                   | 1891.9 5           | 11 3               | 2289.29 | (4 <sup>+</sup> )                   |                    |                                                                                                                                                                                                  |
|                     |                                   | 2069.2 2           | 100 10             | 2112.30 | 6 <sup>+</sup>                      |                    |                                                                                                                                                                                                  |
|                     |                                   | 2639.9 3           | 95 10              | 1541.24 | 4 <sup>+</sup>                      |                    |                                                                                                                                                                                                  |
| 4186.3              | (10 <sup>+</sup> )                | 198                | ≈10                | 3988.1  | (10 <sup>+</sup> )                  |                    | $E_\gamma$ , $I_\gamma$ : from ( <sup>58</sup> Ni,2p2 $\alpha\gamma$ ).                                                                                                                          |
|                     |                                   | 434.1              | 100 5              | 3752.64 | (9 <sup>+</sup> )                   | (D)                | $E_\gamma$ , $I_\gamma$ ,Mult.: from ( <sup>58</sup> Ni,2p2 $\alpha\gamma$ ).                                                                                                                    |
| 4221.96             | (5 <sup>+</sup> ,6 <sup>+</sup> ) | 876.7 1            | 20.9 17            | 3345.15 | (5,6 <sup>+</sup> )                 |                    |                                                                                                                                                                                                  |
|                     |                                   | 1213.0 1           | 47 4               | 3008.89 | (5,6 <sup>+</sup> )                 |                    |                                                                                                                                                                                                  |
|                     |                                   | 1497.6 1           | 20.0 17            | 2724.37 | (5,6 <sup>+</sup> )                 |                    |                                                                                                                                                                                                  |
|                     |                                   | 1658.0 1           | 13.9 9             | 2564.13 | (5,6 <sup>+</sup> )                 |                    |                                                                                                                                                                                                  |

Adopted Levels, Gammas (continued)

$\gamma(^{98}\text{Pd})$  (continued)

| $E_i(\text{level})$ | $J_i^\pi$                         | $E_\gamma$ †           | $I_\gamma$ †          | $E_f$   | $J_f^\pi$                           | Mult. # | Comments                                                                          |
|---------------------|-----------------------------------|------------------------|-----------------------|---------|-------------------------------------|---------|-----------------------------------------------------------------------------------|
| 4221.96             | (5 <sup>+</sup> ,6 <sup>+</sup> ) | 1814.2 2               | 9.6 9                 | 2407.83 | (4,5,6 <sup>+</sup> )               |         |                                                                                   |
|                     |                                   | 1932.6 2               | 8.7 9                 | 2289.29 | (4 <sup>+</sup> )                   |         |                                                                                   |
|                     |                                   | 2109.5 1               | 100 8                 | 2112.30 | 6 <sup>+</sup>                      |         |                                                                                   |
| 4265.48             | (6 <sup>+</sup> )                 | 502.2 1                | 17.9 14               | 3763.27 | (5,6,7)                             |         |                                                                                   |
|                     |                                   | 1189.3 1               | 32.1 21               | 3076.39 | (6 <sup>+</sup> ,7)                 |         |                                                                                   |
|                     |                                   | 1491.6 3               | 3.5 6                 | 2773.03 | 8 <sup>+</sup>                      |         |                                                                                   |
|                     |                                   | 1701.3 1               | 100 7                 | 2564.13 | (5,6 <sup>+</sup> )                 |         |                                                                                   |
|                     |                                   | 2153.1 1               | 61 4                  | 2112.30 | 6 <sup>+</sup>                      |         |                                                                                   |
|                     |                                   | 2723.9 4               | 6.4 14                | 1541.24 | 4 <sup>+</sup>                      |         |                                                                                   |
| 4278.04             | (6 <sup>+</sup> ,7)               | 1505.0 1               | 100                   | 2773.03 | 8 <sup>+</sup>                      |         |                                                                                   |
| 4284.59             | (5 <sup>+</sup> ,6 <sup>+</sup> ) | 521.2 2                | 3.0 4                 | 3763.27 | (5,6,7)                             |         |                                                                                   |
|                     |                                   | 939.3 1                | 6.1 6                 | 3345.15 | (5,6 <sup>+</sup> )                 |         |                                                                                   |
|                     |                                   | 1208.3 1               | 21.7 17               | 3076.39 | (6 <sup>+</sup> ,7)                 |         |                                                                                   |
|                     |                                   | 1275.7 2               | 6.1 6                 | 3008.89 | (5,6 <sup>+</sup> )                 |         |                                                                                   |
|                     |                                   | 1560.2 1               | 100 6                 | 2724.37 | (5,6 <sup>+</sup> )                 |         |                                                                                   |
|                     |                                   | 1664.8 2               | 13.9 17               | 2619.96 | (5 <sup>-</sup> )                   |         |                                                                                   |
| 4291.71             |                                   | 2002.4 2               | 100                   | 2289.29 | (4 <sup>+</sup> )                   |         |                                                                                   |
| 4314.74             |                                   | 1189.6 2               | 100                   | 3125.13 | (5 <sup>+</sup> ,6 <sup>+</sup> )   |         |                                                                                   |
| 4321.46             | (5,6,7)                           | 558.2 1                | 22.0 20               | 3763.27 | (5,6,7)                             |         |                                                                                   |
|                     |                                   | 976.5 2                | 20.0 20               | 3345.15 | (5,6 <sup>+</sup> )                 |         |                                                                                   |
|                     |                                   | 1102.0 1               | 62 6                  | 3219.30 | (6 <sup>+</sup> ,7,8 <sup>+</sup> ) |         |                                                                                   |
|                     |                                   | 1757.4 1               | 100 8                 | 2564.13 | (5,6 <sup>+</sup> )                 |         |                                                                                   |
| 4332.22             | (7 <sup>+</sup> )                 | 579.4 2                | 21 3                  | 3752.64 | (9 <sup>+</sup> )                   |         |                                                                                   |
|                     |                                   | 1559.2 1               | 100 11                | 2773.03 | 8 <sup>+</sup>                      |         |                                                                                   |
|                     |                                   | 2043.1 <sup>a</sup> 3  | 27 5                  | 2289.29 | (4 <sup>+</sup> )                   | [M3]    | $E_\gamma$ : implied mult=[M3] makes the placement of this $\gamma$ questionable. |
| 4353.52             | (5,6,7)                           | 912.7 3                | 27 5                  | 3440.64 | (5,6 <sup>+</sup> )                 |         |                                                                                   |
|                     |                                   | 1228.2 3               | 26 5                  | 3125.13 | (5 <sup>+</sup> ,6 <sup>+</sup> )   |         |                                                                                   |
|                     |                                   | 1789.8 2               | 46 5                  | 2564.13 | (5,6 <sup>+</sup> )                 |         |                                                                                   |
|                     |                                   | 1945.6 1               | 100 11                | 2407.83 | (4,5,6 <sup>+</sup> )               |         |                                                                                   |
| 4364.3              | (11 <sup>+</sup> )                | 376                    | ≈11                   | 3988.1  | (10 <sup>+</sup> )                  |         |                                                                                   |
|                     |                                   | 720.5 <sup>&amp;</sup> | ≈100 <sup>&amp;</sup> | 3644.49 | 10 <sup>+</sup>                     |         |                                                                                   |
| 4373.45             |                                   | 1809.3 1               | 100                   | 2564.13 | (5,6 <sup>+</sup> )                 |         |                                                                                   |
| 4388.49             | (7 <sup>+</sup> )                 | 635.7 1                | 45 6                  | 3752.64 | (9 <sup>+</sup> )                   |         |                                                                                   |
|                     |                                   | 755.4 1                | 62 8                  | 3633.30 | (5,6,7)                             |         |                                                                                   |
|                     |                                   | 1168.9 2               | 100 10                | 3219.30 | (6 <sup>+</sup> ,7,8 <sup>+</sup> ) |         |                                                                                   |
| 4406.03             | (5,6,7)                           | 2293.7 1               | 100                   | 2112.30 | 6 <sup>+</sup>                      |         |                                                                                   |
| 4410.85             | (6 <sup>+</sup> ,7)               | 1637.8 1               | 100                   | 2773.03 | 8 <sup>+</sup>                      |         |                                                                                   |
| 4412.48             | (5,6,7)                           | 1688.1 1               | 100                   | 2724.37 | (5,6 <sup>+</sup> )                 |         |                                                                                   |
| 4417.43             | (5,6 <sup>+</sup> )               | 976.9 2                | 26 4                  | 3440.64 | (5,6 <sup>+</sup> )                 |         |                                                                                   |
|                     |                                   | 1853.3 1               | 100 7                 | 2564.13 | (5,6 <sup>+</sup> )                 |         |                                                                                   |
|                     |                                   | 2127.7 3               | 15.5 17               | 2289.29 | (4 <sup>+</sup> )                   |         |                                                                                   |
| 4444.90             |                                   | 1436.0 2               | 100                   | 3008.89 | (5,6 <sup>+</sup> )                 |         |                                                                                   |
| 4446.2              | 12 <sup>+</sup>                   | 82.2                   | ≈12                   | 4364.3  | (11 <sup>+</sup> )                  | (D)     | $E_\gamma, I_\gamma$ : from ( $^{58}\text{Ni}, 2p2\alpha\gamma$ ).                |

**Adopted Levels, Gammas (continued)**

$\gamma(^{98}\text{Pd})$  (continued)

| $E_i(\text{level})$ | $J_i^\pi$                         | $E_\gamma^\dagger$                                                                                                                                                                                          | $I_\gamma^\dagger$                                                                            | $E_f$                                                                                                                                                                                                                                                                                                                                                        | $J_f^\pi$                             | Mult. # | Comments                                                                                                                                                                                                                                                                                                                                                              |
|---------------------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4446.2              | 12 <sup>+</sup>                   | 459<br>801.3 3                                                                                                                                                                                              | $\approx 6$<br>$\approx 100$                                                                  | 3988.1<br>3644.49                                                                                                                                                                                                                                                                                                                                            | (10 <sup>+</sup> )<br>10 <sup>+</sup> | Q       | $E_\gamma, I_\gamma$ : from ( <sup>58</sup> Ni,2p2 $\alpha\gamma$ ).<br>$E_\gamma$ : weighted average of 802.1 8 from ( <sup>32</sup> S,2p2n $\gamma$ ) and 801.2 3 from ( $\alpha$ ,2n $\gamma$ ).<br>$I_\gamma$ : from ( <sup>58</sup> Ni,2p2 $\alpha\gamma$ ).<br>Mult.: from $\gamma(\theta)$ in ( <sup>32</sup> S,2p2n $\gamma$ ) and ( $\alpha$ ,2n $\gamma$ ). |
| 4464.33             | (5,6 <sup>+</sup> )               | 1023.4 2<br>1388.0 2<br>1739.8 2<br>2174.8 2<br>2352.3 2<br>2923.3 2                                                                                                                                        | 50 6<br>83 11<br>67 6<br>56 6<br>94 11<br>100 17                                              | 3440.64 (5,6 <sup>+</sup> )<br>3076.39 (6 <sup>+</sup> ,7)<br>2724.37 (5,6 <sup>+</sup> )<br>2289.29 (4 <sup>+</sup> )<br>2112.30 6 <sup>+</sup><br>1541.24 4 <sup>+</sup>                                                                                                                                                                                   |                                       |         |                                                                                                                                                                                                                                                                                                                                                                       |
| 4500.40             | (5,6 <sup>+</sup> )               | 1775.9 2<br>2211.2 2                                                                                                                                                                                        | 100 7<br>79 7                                                                                 | 2724.37 (5,6 <sup>+</sup> )<br>2289.29 (4 <sup>+</sup> )                                                                                                                                                                                                                                                                                                     |                                       |         |                                                                                                                                                                                                                                                                                                                                                                       |
| 4515.26             | (5,6,7)                           | 913.8 2<br>1170.0 2<br>2403.0 5                                                                                                                                                                             | 39 10<br>100 13<br>87 43                                                                      | 3601.55 (5,6 <sup>+</sup> )<br>3345.15 (5,6 <sup>+</sup> )<br>2112.30 6 <sup>+</sup>                                                                                                                                                                                                                                                                         |                                       |         |                                                                                                                                                                                                                                                                                                                                                                       |
| 4522.26             | (7 <sup>+</sup> )                 | 769.5 2<br>2410.2 3                                                                                                                                                                                         | 28 4<br>100 13                                                                                | 3752.64 (9 <sup>+</sup> )<br>2112.30 6 <sup>+</sup>                                                                                                                                                                                                                                                                                                          |                                       |         |                                                                                                                                                                                                                                                                                                                                                                       |
| 4541.70             |                                   | 1465.3 2                                                                                                                                                                                                    | 100                                                                                           | 3076.39 (6 <sup>+</sup> ,7)                                                                                                                                                                                                                                                                                                                                  |                                       |         |                                                                                                                                                                                                                                                                                                                                                                       |
| 4542.62             | (6 <sup>+</sup> ,7 <sup>+</sup> ) | 1197.7 2<br>1769.5 1<br>1818.3 3<br>1978.4 2<br>2430.3 1                                                                                                                                                    | 8.4 13<br>100 8<br>13.1 16<br>21.3 16<br>56 5                                                 | 3345.15 (5,6 <sup>+</sup> )<br>2773.03 8 <sup>+</sup><br>2724.37 (5,6 <sup>+</sup> )<br>2564.13 (5,6 <sup>+</sup> )<br>2112.30 6 <sup>+</sup>                                                                                                                                                                                                                |                                       |         |                                                                                                                                                                                                                                                                                                                                                                       |
| 4559.44             | (5 <sup>+</sup> ,6 <sup>+</sup> ) | 654.1 1<br>706.5 1<br>1118.5 2<br>1214.2 1<br>1467.4 <sup>‡</sup> 1<br>1482.9 1<br>1943.1 2<br>1994.9 <sup>‡</sup> 1<br>2152.6 <sup>‡</sup> 2<br>2270.8 <sup>‡</sup> 1<br>2447.6 2<br>3018.8 <sup>‡</sup> 2 | 94 8<br>64 8<br>22 3<br>44 6<br>25 3<br>42 3<br>28 3<br>100 8<br>25 3<br>78 8<br>33 8<br>58 8 | 3905.33 (5,6,7)<br>3852.93 (5,6 <sup>+</sup> )<br>3440.64 (5,6 <sup>+</sup> )<br>3345.15 (5,6 <sup>+</sup> )<br>3091.40 (4,5,6 <sup>+</sup> )<br>3076.39 (6 <sup>+</sup> ,7)<br>2616.87 (5,6 <sup>+</sup> )<br>2564.13 (5,6 <sup>+</sup> )<br>2407.83 (4,5,6 <sup>+</sup> )<br>2289.29 (4 <sup>+</sup> )<br>2112.30 6 <sup>+</sup><br>1541.24 4 <sup>+</sup> |                                       |         | $E_\gamma$ : level-energy difference=1468.03.<br><br>$E_\gamma$ : level-energy difference=1995.29.<br>$E_\gamma$ : level-energy difference=2151.59.<br>$E_\gamma$ : level-energy difference=2270.13.<br><br>$E_\gamma$ : level-energy difference=3018.15.                                                                                                             |
| 4598.85             | (5,6,7)                           | 997.1 2<br>1522.4 2<br>1874.7 2<br>2486.5 3                                                                                                                                                                 | 42 5<br>48 6<br>100 8<br>31 15                                                                | 3601.55 (5,6 <sup>+</sup> )<br>3076.39 (6 <sup>+</sup> ,7)<br>2724.37 (5,6 <sup>+</sup> )<br>2112.30 6 <sup>+</sup>                                                                                                                                                                                                                                          |                                       |         |                                                                                                                                                                                                                                                                                                                                                                       |
| 4608.60             | (5,6,7)                           | 1532.2 1                                                                                                                                                                                                    | 100                                                                                           | 3076.39 (6 <sup>+</sup> ,7)                                                                                                                                                                                                                                                                                                                                  |                                       |         |                                                                                                                                                                                                                                                                                                                                                                       |
| 4611.2              | (5,6,7)                           | 2498.9 4                                                                                                                                                                                                    | 100                                                                                           | 2112.30 6 <sup>+</sup>                                                                                                                                                                                                                                                                                                                                       |                                       |         |                                                                                                                                                                                                                                                                                                                                                                       |
| 4615.02             | (5,6 <sup>+</sup> )               | 1538.6 1                                                                                                                                                                                                    | 100 13                                                                                        | 3076.39 (6 <sup>+</sup> ,7)                                                                                                                                                                                                                                                                                                                                  |                                       |         |                                                                                                                                                                                                                                                                                                                                                                       |

Adopted Levels, Gammas (continued)

| $\gamma(^{98}\text{Pd})$ (continued) |                                   |                       |                    |         |                                     |                                               |
|--------------------------------------|-----------------------------------|-----------------------|--------------------|---------|-------------------------------------|-----------------------------------------------|
| $E_i(\text{level})$                  | $J_i^\pi$                         | $E_\gamma^\dagger$    | $I_\gamma^\dagger$ | $E_f$   | $J_f^\pi$                           | Mult. #                                       |
| 4615.02                              | (5,6 <sup>+</sup> )               | 2051.0 3              | 31 4               | 2564.13 | (5,6 <sup>+</sup> )                 |                                               |
|                                      |                                   | 2326.1 8              | 11 4               | 2289.29 | (4 <sup>+</sup> )                   |                                               |
| 4637.94                              | (5,6,7)                           | 732.6 1               | 61 6               | 3905.33 | (5,6,7)                             |                                               |
|                                      |                                   | 2073.8 1              | 100 11             | 2564.13 | (5,6 <sup>+</sup> )                 |                                               |
| 4640.3                               | (11 <sup>-</sup> )                | 454.4                 | 73 3               | 4186.3  | (10 <sup>+</sup> )                  | (D)                                           |
|                                      |                                   | 495.6                 | 100 3              | 4145.1  | (9 <sup>-</sup> )                   | (Q)                                           |
|                                      |                                   | 652.4                 | 21 3               | 3988.1  | (10 <sup>+</sup> )                  | (D)                                           |
|                                      |                                   | 995.2                 | 58 4               | 3644.49 | 10 <sup>+</sup>                     | (D)                                           |
| 4664.83                              |                                   | 2257.0 3              | 82 14              | 2407.83 | (4,5,6 <sup>+</sup> )               |                                               |
|                                      |                                   | 2375.5 3              | 100 16             | 2289.29 | (4 <sup>+</sup> )                   |                                               |
| 4674.8                               | (12 <sup>+</sup> )                | 310.7                 | 100                | 4364.3  | (11 <sup>+</sup> )                  | (D)                                           |
| 4691.33                              | (5,6 <sup>+</sup> )               | 1138.3 2              | 83 13              | 3553.18 | (4 <sup>+</sup> )                   |                                               |
|                                      |                                   | 1966.8 3              | 90 13              | 2724.37 | (5,6 <sup>+</sup> )                 |                                               |
|                                      |                                   | 2401.8 3              | 100 14             | 2289.29 | (4 <sup>+</sup> )                   |                                               |
| 4718.28                              | (6 <sup>+</sup> ,7)               | 767.2 1               | 45 4               | 3950.99 | (5,6,7)                             |                                               |
|                                      |                                   | 954.9 2               | 45 7               | 3763.27 | (5,6,7)                             |                                               |
|                                      |                                   | 1641.8 1              | 52 4               | 3076.39 | (6 <sup>+</sup> ,7)                 |                                               |
|                                      |                                   | 1945.4 1              | 100 7              | 2773.03 | 8 <sup>+</sup>                      |                                               |
| 4756.11                              | (5,6,7)                           | 1679.7 1              | 100                | 3076.39 | (6 <sup>+</sup> ,7)                 |                                               |
| 4766.84                              | (6 <sup>+</sup> ,7)               | 1548.0 3              | 100 13             | 3219.30 | (6 <sup>+</sup> ,7,8 <sup>+</sup> ) |                                               |
|                                      |                                   | 1690.2 1              | 93 7               | 3076.39 | (6 <sup>+</sup> ,7)                 |                                               |
|                                      |                                   | 1993.8 2              | 60 7               | 2773.03 | 8 <sup>+</sup>                      |                                               |
|                                      |                                   | 2203.4 <sup>±</sup> 2 | 53 7               | 2564.13 | (5,6 <sup>+</sup> )                 | $E_\gamma$ : level-energy difference=2202.68. |
| 4813.45                              |                                   | 1372.8 2              | 100                | 3440.64 | (5,6 <sup>+</sup> )                 |                                               |
| 4845.5                               |                                   | 2228.6 4              | 100                | 2616.87 | (5,6 <sup>+</sup> )                 |                                               |
| 4847.17                              | (6 <sup>+</sup> ,7 <sup>+</sup> ) | 870.8 1               | 16.8 17            | 3976.29 | (6 <sup>+</sup> ,7)                 |                                               |
|                                      |                                   | 882.2 2               | 6.8 8              | 3965.15 | (5,6,7)                             |                                               |
|                                      |                                   | 993.8 2               | 10.9 17            | 3852.93 | (5,6 <sup>+</sup> )                 |                                               |
|                                      |                                   | 1083.9 1              | 59 5               | 3763.27 | (5,6,7)                             |                                               |
|                                      |                                   | 1087.8 4              | 5.9 17             | 3759.66 | (5,6,7)                             |                                               |
|                                      |                                   | 1245.5 1              | 16.8 17            | 3601.55 | (5,6 <sup>+</sup> )                 |                                               |
|                                      |                                   | 1406.7 2              | 5.9 9              | 3440.64 | (5,6 <sup>+</sup> )                 |                                               |
|                                      |                                   | 1721.8 2              | 9.2 17             | 3125.13 | (5 <sup>+</sup> ,6 <sup>+</sup> )   |                                               |
|                                      |                                   | 1770.6 1              | 23.5 17            | 3076.39 | (6 <sup>+</sup> ,7)                 |                                               |
|                                      |                                   | 2074.2 1              | 57 4               | 2773.03 | 8 <sup>+</sup>                      |                                               |
|                                      |                                   | 2122.8 2              | 15.1 17            | 2724.37 | (5,6 <sup>+</sup> )                 |                                               |
|                                      |                                   | 2283.1 1              | 26 3               | 2564.13 | (5,6 <sup>+</sup> )                 |                                               |
|                                      |                                   | 2735.0 1              | 100 8              | 2112.30 | 6 <sup>+</sup>                      |                                               |
| 4877.34                              | (5,6,7)                           | 1752.2 4              | 25 6               | 3125.13 | (5 <sup>+</sup> ,6 <sup>+</sup> )   |                                               |
|                                      |                                   | 2765.0 2              | 100 13             | 2112.30 | 6 <sup>+</sup>                      |                                               |
| 4887.92                              |                                   | 2598.6 2              | 100                | 2289.29 | (4 <sup>+</sup> )                   |                                               |
| 4891.58                              | (6 <sup>+</sup> ,7)               | 1258.5 1              | 25 4               | 3633.30 | (5,6,7)                             |                                               |
|                                      |                                   | 1290.0 2              | 56 6               | 3601.55 | (5,6 <sup>+</sup> )                 |                                               |

**Adopted Levels, Gammas (continued)**

$\gamma(^{98}\text{Pd})$  (continued)

| $E_i(\text{level})$ | $J_i^\pi$                         | $E_\gamma$ † | $I_\gamma$ † | $E_f$   | $J_f^\pi$                           | Comments                                      |
|---------------------|-----------------------------------|--------------|--------------|---------|-------------------------------------|-----------------------------------------------|
| 4891.58             | (6 <sup>+</sup> ,7)               | 2118.5 2     | 67 6         | 2773.03 | 8 <sup>+</sup>                      |                                               |
|                     |                                   | 2327.4 1     | 100 11       | 2564.13 | (5,6 <sup>+</sup> )                 |                                               |
|                     |                                   | 2778.4 ‡ 2   | 83 11        | 2112.30 | 6 <sup>+</sup>                      | $E_\gamma$ : level-energy difference=2779.23. |
| 4918.26             | (5,6 <sup>+</sup> )               | 1827.0 4     | 67 15        | 3091.40 | (4,5,6 <sup>+</sup> )               |                                               |
|                     |                                   | 2193.8 3     | 100 15       | 2724.37 | (5,6 <sup>+</sup> )                 |                                               |
|                     |                                   | 2628.9 3     | 87 15        | 2289.29 | (4 <sup>+</sup> )                   |                                               |
| 4929.7              |                                   | 2365.5 3     | 100          | 2564.13 | (5,6 <sup>+</sup> )                 |                                               |
| 4931.0              |                                   | 1805.9 3     | 100          | 3125.13 | (5 <sup>+</sup> ,6 <sup>+</sup> )   |                                               |
| 4960.89             | (5,6,7)                           | 1201.3 2     | 100 17       | 3759.66 | (5,6,7)                             |                                               |
|                     |                                   | 1951.8 3     | 73 13        | 3008.89 | (5,6 <sup>+</sup> )                 |                                               |
| 5009.37             | (5,6 <sup>+</sup> )               | 2000.6 3     | 18 3         | 3008.89 | (5,6 <sup>+</sup> )                 |                                               |
|                     |                                   | 2445.2 2     | 19.7 24      | 2564.13 | (5,6 <sup>+</sup> )                 |                                               |
|                     |                                   | 2896.8 3     | 6 6          | 2112.30 | 6 <sup>+</sup>                      |                                               |
|                     |                                   | 3468.1 2     | 100 9        | 1541.24 | 4 <sup>+</sup>                      |                                               |
| 5051.36             | (6 <sup>+</sup> )                 | 1074.8 2     | 12 3         | 3976.29 | (6 <sup>+</sup> ,7)                 |                                               |
|                     |                                   | 1831.7 2     | 19 3         | 3219.30 | (6 <sup>+</sup> ,7,8 <sup>+</sup> ) |                                               |
|                     |                                   | 2278.3 1     | 100 8        | 2773.03 | 8 <sup>+</sup>                      |                                               |
|                     |                                   | 2327.4 2     | 25 3         | 2724.37 | (5,6 <sup>+</sup> )                 |                                               |
|                     |                                   | 2487.6 2     | 21 3         | 2564.13 | (5,6 <sup>+</sup> )                 |                                               |
|                     |                                   | 2938.9 3     | 25 3         | 2112.30 | 6 <sup>+</sup>                      |                                               |
|                     |                                   | 3509.7 3     | 16 2         | 1541.24 | 4 <sup>+</sup>                      |                                               |
| 5059.62             | (5 <sup>+</sup> ,6 <sup>+</sup> ) | 1505.6 ‡ 2   | 29 5         | 3553.18 | (4 <sup>+</sup> )                   | $E_\gamma$ : level-energy difference=1506.43. |
|                     |                                   | 1619.6 ‡ 2   | 43 5         | 3440.64 | (5,6 <sup>+</sup> )                 | $E_\gamma$ : level-energy difference=1618.97. |
|                     |                                   | 1934.4 2     | 67 10        | 3125.13 | (5 <sup>+</sup> ,6 <sup>+</sup> )   |                                               |
|                     |                                   | 1968.8 3     | 14 4         | 3091.40 | (4,5,6 <sup>+</sup> )               |                                               |
|                     |                                   | 2050.9 2     | 38 5         | 3008.89 | (5,6 <sup>+</sup> )                 |                                               |
|                     |                                   | 2442.6 2     | 33 5         | 2616.87 | (5,6 <sup>+</sup> )                 |                                               |
|                     |                                   | 2770.1 2     | 100 10       | 2289.29 | (4 <sup>+</sup> )                   |                                               |
|                     |                                   | 2948.0 3     | 52 5         | 2112.30 | 6 <sup>+</sup>                      |                                               |
|                     |                                   | 3518.1 2     | 48 4         | 1541.24 | 4 <sup>+</sup>                      |                                               |
| 5061.89             | (5,6,7)                           | 1156.5 1     | 100 10       | 3905.33 | (5,6,7)                             |                                               |
|                     |                                   | 1299.1 3     | 20 5         | 3763.27 | (5,6,7)                             |                                               |
| 5131.02             | (5,6 <sup>+</sup> )               | 2566.7 2     | 86 9         | 2564.13 | (5,6 <sup>+</sup> )                 |                                               |
|                     |                                   | 2842.4 5     | 29 7         | 2289.29 | (4 <sup>+</sup> )                   |                                               |
|                     |                                   | 3018.7 2     | 100 10       | 2112.30 | 6 <sup>+</sup>                      |                                               |
| 5173.48             | (5 <sup>+</sup> ,6 <sup>+</sup> ) | 951.3 2      | 9 3          | 4221.96 | (5 <sup>+</sup> ,6 <sup>+</sup> )   |                                               |
|                     |                                   | 1092.4 2     | 8.7 11       | 4081.63 | (5,6,7)                             |                                               |
|                     |                                   | 1320.6 3     | 20 4         | 3852.93 | (5,6 <sup>+</sup> )                 |                                               |
|                     |                                   | 2097.0 2     | 23 3         | 3076.39 | (6 <sup>+</sup> ,7)                 |                                               |
|                     |                                   | 2164.7 3     | 8.0 12       | 3008.89 | (5,6 <sup>+</sup> )                 |                                               |
|                     |                                   | 2449.0 2     | 13.3 13      | 2724.37 | (5,6 <sup>+</sup> )                 |                                               |
|                     |                                   | 2609.1 2     | 21 3         | 2564.13 | (5,6 <sup>+</sup> )                 |                                               |
|                     |                                   | 3061.1 1     | 100 8        | 2112.30 | 6 <sup>+</sup>                      |                                               |

Adopted Levels, Gammas (continued)

$\gamma(^{98}\text{Pd})$  (continued)

| $E_i(\text{level})$ | $J_i^\pi$                                         | $E_\gamma^\dagger$ | $I_\gamma^\dagger$ | $E_f$   | $J_f^\pi$                           |
|---------------------|---------------------------------------------------|--------------------|--------------------|---------|-------------------------------------|
| 5173.48             | (5 <sup>+</sup> ,6 <sup>+</sup> )                 | 3632.2             | 2 47 4             | 1541.24 | 4 <sup>+</sup>                      |
| 5181.78             | (5,6,7)                                           | 1962.1             | 4 36 12            | 3219.30 | (6 <sup>+</sup> ,7,8 <sup>+</sup> ) |
|                     |                                                   | 2617.7             | 2 100 11           | 2564.13 | (5,6 <sup>+</sup> )                 |
| 5206.45             | (5 <sup>+</sup> ,6 <sup>+</sup> )                 | 2798.6             | 2 52 4             | 2407.83 | (4,5,6 <sup>+</sup> )               |
|                     |                                                   | 3094.1             | 2 65 9             | 2112.30 | 6 <sup>+</sup>                      |
|                     |                                                   | 3665.1             | 2 100 13           | 1541.24 | 4 <sup>+</sup>                      |
| 5207.69             |                                                   | 819.2              | 1 100              | 4388.49 | (7 <sup>+</sup> )                   |
| 5212.7              |                                                   | 2804.8             | 3 100              | 2407.83 | (4,5,6 <sup>+</sup> )               |
| 5236.59             | (5 <sup>+</sup> ,6 <sup>+</sup> ,7 <sup>+</sup> ) | 1473.4             | 2 30 4             | 3763.27 | (5,6,7)                             |
|                     |                                                   | 1477.2             | 2 35 4             | 3759.66 | (5,6,7)                             |
|                     |                                                   | 1603.5             | 2 22 4             | 3633.30 | (5,6,7)                             |
|                     |                                                   | 1891.4             | 2 100 9            | 3345.15 | (5,6 <sup>+</sup> )                 |
|                     |                                                   | 2511.9             | 2 57 4             | 2724.37 | (5,6 <sup>+</sup> )                 |
|                     |                                                   | 2671.7             | 3 27 4             | 2564.13 | (5,6 <sup>+</sup> )                 |
| 5248.31             | (5,6,7)                                           | 1272.0             | 3 29 7             | 3976.29 | (6 <sup>+</sup> ,7)                 |
|                     |                                                   | 2684.2             | 2 79 7             | 2564.13 | (5,6 <sup>+</sup> )                 |
|                     |                                                   | 3135.9             | 2 100 14           | 2112.30 | 6 <sup>+</sup>                      |
| 5269.0              |                                                   | 1924.2             | 3 100 16           | 3345.15 | (5,6 <sup>+</sup> )                 |
|                     |                                                   | 2704.5             | 3 86 12            | 2564.13 | (5,6 <sup>+</sup> )                 |
| 5282.85             |                                                   | 1937.5             | 3 100 15           | 3345.15 | (5,6 <sup>+</sup> )                 |
|                     |                                                   | 2063.6             | 2 58 17            | 3219.30 | (6 <sup>+</sup> ,7,8 <sup>+</sup> ) |
| 5286.74             | (5,6,7 <sup>-</sup> )                             | 1685.8             | 4 33 8             | 3601.55 | (5,6 <sup>+</sup> )                 |
|                     |                                                   | 2210.1             | 2 100 8            | 3076.39 | (6 <sup>+</sup> ,7)                 |
|                     |                                                   | 2278.0             | 3 50 8             | 3008.89 | (5,6 <sup>+</sup> )                 |
|                     |                                                   | 2666.4             | 5 22 6             | 2619.96 | (5 <sup>-</sup> )                   |
|                     |                                                   | 3174.6             | 5 67 17            | 2112.30 | 6 <sup>+</sup>                      |
| 5303.96             | (5 <sup>+</sup> ,6 <sup>+</sup> )                 | 1902.6             | 3 56 13            | 3401.50 | (4 <sup>+</sup> )                   |
|                     |                                                   | 2212.7             | 2 50 6             | 3091.40 | (4,5,6 <sup>+</sup> )               |
|                     |                                                   | 2579.2             | 2 69 6             | 2724.37 | (5,6 <sup>+</sup> )                 |
|                     |                                                   | 2896.1             | 3 50 13            | 2407.83 | (4,5,6 <sup>+</sup> )               |
|                     |                                                   | 3014.5             | 3 44 6             | 2289.29 | (4 <sup>+</sup> )                   |
|                     |                                                   | 3762.8             | 2 100 13           | 1541.24 | 4 <sup>+</sup>                      |
| 5314.11             | (6 <sup>+</sup> ,7)                               | 2541.0             | 2 100 8            | 2773.03 | 8 <sup>+</sup>                      |
|                     |                                                   | 3201.8             | 2 100 8            | 2112.30 | 6 <sup>+</sup>                      |
| 5352.4              |                                                   | 2788.2             | 4 100              | 2564.13 | (5,6 <sup>+</sup> )                 |
| 5399.66             | (5,6,7)                                           | 3287.3             | 2 100              | 2112.30 | 6 <sup>+</sup>                      |
| 5416.86             | (5,6,7)                                           | 2325.4             | 4 19 5             | 3091.40 | (4,5,6 <sup>+</sup> )               |
|                     |                                                   | 3304.5             | 2 100 8            | 2112.30 | 6 <sup>+</sup>                      |
| 5436.2              | (5,6 <sup>+</sup> )                               | 3894.9             | 5 100              | 1541.24 | 4 <sup>+</sup>                      |
| 5450.52             | (5,6,7)                                           | 1474.8             | 3 69 13            | 3976.29 | (6 <sup>+</sup> ,7)                 |
|                     |                                                   | 2441.3             | 3 54 10            | 3008.89 | (5,6 <sup>+</sup> )                 |
|                     |                                                   | 2886.1             | 3 89 12            | 2564.13 | (5,6 <sup>+</sup> )                 |
|                     |                                                   | 3338.1             | 4 100 14           | 2112.30 | 6 <sup>+</sup>                      |

Adopted Levels, Gammas (continued)

| $\gamma(^{98}\text{Pd})$ (continued) |                                                     |                    |                    |         |                                    |        | Comments                                                                         |
|--------------------------------------|-----------------------------------------------------|--------------------|--------------------|---------|------------------------------------|--------|----------------------------------------------------------------------------------|
| $E_i(\text{level})$                  | $J_i^\pi$                                           | $E_\gamma^\dagger$ | $I_\gamma^\dagger$ | $E_f$   | $J_f^\pi$                          | Mult.# |                                                                                  |
| 5463.1                               | (13 <sup>+</sup> )                                  | 788                | $\approx 20$       | 4674.8  | (12 <sup>+</sup> )                 |        | $E_\gamma, I_\gamma$ : from ( $^{58}\text{Ni}, 2p2\alpha\gamma$ ).               |
|                                      |                                                     | 1017.4             | 100 3              | 4446.2  | 12 <sup>+</sup>                    | (D)    | $E_\gamma, I_\gamma, \text{Mult.}$ : from ( $^{58}\text{Ni}, 2p2\alpha\gamma$ ). |
| 5477.33                              | (5 <sup>+</sup> , 6 <sup>+</sup> )                  | 2352.0 3           | 16 3               | 3125.13 | (5 <sup>+</sup> , 6 <sup>+</sup> ) |        |                                                                                  |
|                                      |                                                     | 2469.2 3           | 13 3               | 3008.89 | (5, 6 <sup>+</sup> )               |        |                                                                                  |
|                                      |                                                     | 3364.5 2           | 39 3               | 2112.30 | 6 <sup>+</sup>                     |        |                                                                                  |
|                                      |                                                     | 3936.2 2           | 100 10             | 1541.24 | 4 <sup>+</sup>                     |        |                                                                                  |
| 5486.99                              | (5 <sup>+</sup> , 6 <sup>+</sup> )                  | 1113.5 3           | 11 3               | 4373.45 |                                    |        |                                                                                  |
|                                      |                                                     | 1511.3 3           | 20 4               | 3976.29 | (6 <sup>+</sup> , 7)               |        |                                                                                  |
|                                      |                                                     | 1727.0 2           | 57 10              | 3759.66 | (5, 6, 7)                          |        |                                                                                  |
|                                      |                                                     | 2362.0 3           | 29 5               | 3125.13 | (5 <sup>+</sup> , 6 <sup>+</sup> ) |        |                                                                                  |
|                                      |                                                     | 2922.6 2           | 43 5               | 2564.13 | (5, 6 <sup>+</sup> )               |        |                                                                                  |
|                                      |                                                     | 3374.5 2           | 100 10             | 2112.30 | 6 <sup>+</sup>                     |        |                                                                                  |
|                                      |                                                     | 3946.0 2           | 67 10              | 1541.24 | 4 <sup>+</sup>                     |        |                                                                                  |
| 5504.4                               |                                                     | 864                | 100                | 4640.3  | (11 <sup>-</sup> )                 |        | $E_\gamma$ : from ( $^{58}\text{Ni}, 2p2\alpha\gamma$ ).                         |
| 5505.5                               |                                                     | 2721.5 4           | 100                | 2784.00 | (4, 5, 6 <sup>+</sup> )            |        |                                                                                  |
| 5507.39                              | (5 <sup>+</sup> , 6 <sup>+</sup> , 7 <sup>+</sup> ) | 1426.1 2           | 70 10              | 4081.63 | (5, 6, 7)                          |        |                                                                                  |
|                                      |                                                     | 2162.1 3           | 42 9               | 3345.15 | (5, 6 <sup>+</sup> )               |        |                                                                                  |
|                                      |                                                     | 2415.9 3           | 47 9               | 3091.40 | (4, 5, 6 <sup>+</sup> )            |        |                                                                                  |
|                                      |                                                     | 3099.1 3           | 60 10              | 2407.83 | (4, 5, 6 <sup>+</sup> )            |        |                                                                                  |
|                                      |                                                     | 3394.8 3           | 100 10             | 2112.30 | 6 <sup>+</sup>                     |        |                                                                                  |
| 5508.8                               | (5, 6 <sup>+</sup> )                                | 2505.0 4           | 100 16             | 3003.59 | (4 <sup>+</sup> )                  |        |                                                                                  |
|                                      |                                                     | 2889.0 4           | 22 5               | 2619.96 | (5 <sup>-</sup> )                  |        |                                                                                  |
| 5536.27                              |                                                     | 1773.3 4           | 80 14              | 3763.27 | (5, 6, 7)                          |        |                                                                                  |
|                                      |                                                     | 2191.0 3           | 86 18              | 3345.15 | (5, 6 <sup>+</sup> )               |        |                                                                                  |
|                                      |                                                     | 2811.7 4           | 100 16             | 2724.37 | (5, 6 <sup>+</sup> )               |        |                                                                                  |
| 5573.8                               | (5, 6 <sup>+</sup> )                                | 4032.5 4           | 100                | 1541.24 | 4 <sup>+</sup>                     |        |                                                                                  |
| 5575.1                               |                                                     | 1973.5 3           | 51 11              | 3601.55 | (5, 6 <sup>+</sup> )               |        |                                                                                  |
|                                      |                                                     | 3167.2 4           | 100 14             | 2407.83 | (4, 5, 6 <sup>+</sup> )            |        |                                                                                  |
| 5576.6                               |                                                     | 2956.4 4           | 64 13              | 2619.96 | (5 <sup>-</sup> )                  |        |                                                                                  |
|                                      |                                                     | 3012.5 3           | 100 13             | 2564.13 | (5, 6 <sup>+</sup> )               |        |                                                                                  |
| 5583.3                               |                                                     | 3470.9 6           | 100                | 2112.30 | 6 <sup>+</sup>                     |        |                                                                                  |
| 5585.1                               |                                                     | 1211.6 2           | 100                | 4373.45 |                                    |        |                                                                                  |
| 5619.6                               |                                                     | 2895.6 6           | 71 17              | 2724.37 | (5, 6 <sup>+</sup> )               |        |                                                                                  |
|                                      |                                                     | 3055.3 4           | 100 17             | 2564.13 | (5, 6 <sup>+</sup> )               |        |                                                                                  |
| 5628.0                               |                                                     | 4086.7 6           | 100                | 1541.24 | 4 <sup>+</sup>                     |        |                                                                                  |
| 5698.9                               | 14 <sup>+</sup>                                     | 236                | $\approx 8$        | 5463.1  | (13 <sup>+</sup> )                 |        | $E_\gamma, I_\gamma$ : from ( $^{58}\text{Ni}, 2p2\alpha\gamma$ ).               |
|                                      |                                                     | 1252.69 14         | 100                | 4446.2  | 12 <sup>+</sup>                    | Q      | $E_\gamma, I_\gamma, \text{Mult.}$ : from ( $^{32}\text{S}, 2p2n\gamma$ ).       |
| 5706.4                               |                                                     | 3417.1 5           | 100                | 2289.29 | (4 <sup>+</sup> )                  |        |                                                                                  |
| 5708.5                               |                                                     | 4167.2 4           | 100                | 1541.24 | 4 <sup>+</sup>                     |        |                                                                                  |
| 5716.0                               |                                                     | 1342.5 2           | 100                | 4373.45 |                                    |        |                                                                                  |
| 5717.77                              | (5 <sup>+</sup> , 6 <sup>+</sup> )                  | 2626.8 3           | 28 6               | 3091.40 | (4, 5, 6 <sup>+</sup> )            |        |                                                                                  |
|                                      |                                                     | 3309.6 2           | 100 11             | 2407.83 | (4, 5, 6 <sup>+</sup> )            |        |                                                                                  |
|                                      |                                                     | 4176.5 2           | 83 11              | 1541.24 | 4 <sup>+</sup>                     |        |                                                                                  |

Adopted Levels, Gammas (continued)

| $\gamma(^{98}\text{Pd})$ (continued) |                                                   |                    |                    |         |                                   |                                                                                     |
|--------------------------------------|---------------------------------------------------|--------------------|--------------------|---------|-----------------------------------|-------------------------------------------------------------------------------------|
| $E_i(\text{level})$                  | $J_i^\pi$                                         | $E_\gamma^\dagger$ | $I_\gamma^\dagger$ | $E_f$   | $J_f^\pi$                         | Mult. <sup>#</sup>                                                                  |
| 5722.9                               |                                                   | 1746.6 4           | 100                | 3976.29 | (6 <sup>+</sup> ,7)               |                                                                                     |
| 5734.7                               | (12 <sup>-</sup> )                                | 1094.5             | 100                | 4640.3  | (11 <sup>-</sup> )                | (D)                                                                                 |
| 5755.98                              | (5 <sup>+</sup> ,6 <sup>+</sup> ,7 <sup>+</sup> ) | 3643.6 2           | 100                | 2112.30 | 6 <sup>+</sup>                    | $E_\gamma, \text{Mult.}: \text{from } (^{58}\text{Ni}, 2p2\alpha\gamma).$           |
| 5778.9                               |                                                   | 3666.5 3           | 100                | 2112.30 | 6 <sup>+</sup>                    |                                                                                     |
| 5814.87                              | (5 <sup>+</sup> ,6 <sup>+</sup> )                 | 3702.5 2           | 100 14             | 2112.30 | 6 <sup>+</sup>                    |                                                                                     |
|                                      |                                                   | 4273.5 4           | 45 6               | 1541.24 | 4 <sup>+</sup>                    |                                                                                     |
| 5817.4                               |                                                   | 2054.1 4           | 100                | 3763.27 | (5,6,7)                           |                                                                                     |
| 5833.73                              | (5 <sup>+</sup> ,6 <sup>+</sup> ,7 <sup>+</sup> ) | 1856.8 3           | 39 8               | 3976.29 | (6 <sup>+</sup> ,7)               |                                                                                     |
|                                      |                                                   | 2074.7 4           | 33 8               | 3759.66 | (5,6,7)                           |                                                                                     |
|                                      |                                                   | 3269.6 2           | 57 8               | 2564.13 | (5,6 <sup>+</sup> )               |                                                                                     |
|                                      |                                                   | 3721.4 2           | 100 8              | 2112.30 | 6 <sup>+</sup>                    |                                                                                     |
| 5845.2                               |                                                   | 3732.8 5           | 100                | 2112.30 | 6 <sup>+</sup>                    |                                                                                     |
| 5852.26                              | (5 <sup>+</sup> ,6 <sup>+</sup> )                 | 2842.8 4           | 53 13              | 3008.89 | (5,6 <sup>+</sup> )               |                                                                                     |
|                                      |                                                   | 3231.9 5           | 69 13              | 2619.96 | (5 <sup>-</sup> )                 |                                                                                     |
|                                      |                                                   | 3444.6 3           | 81 12              | 2407.83 | (4,5,6 <sup>+</sup> )             |                                                                                     |
|                                      |                                                   | 3563.5 7           | 29 9               | 2289.29 | (4 <sup>+</sup> )                 |                                                                                     |
|                                      |                                                   | 4311.0 3           | 100 14             | 1541.24 | 4 <sup>+</sup>                    |                                                                                     |
| 5857.4                               | (14 <sup>+</sup> )                                | 394.5              | 31.0 16            | 5463.1  | (13 <sup>+</sup> )                | (D)                                                                                 |
|                                      |                                                   | 1182.9             | 100 3              | 4674.8  | (12 <sup>+</sup> )                | (Q)                                                                                 |
| 5883.79                              | (5 <sup>+</sup> ,6 <sup>+</sup> )                 | 2759.0 3           | 63 13              | 3125.13 | (5 <sup>+</sup> ,6 <sup>+</sup> ) | $E_\gamma, I_\gamma, \text{Mult.}: \text{from } (^{58}\text{Ni}, 2p2\alpha\gamma).$ |
|                                      |                                                   | 3266.2 3           | 100 13             | 2616.87 | (5,6 <sup>+</sup> )               |                                                                                     |
|                                      |                                                   | 3319.8 2           | 89 11              | 2564.13 | (5,6 <sup>+</sup> )               |                                                                                     |
|                                      |                                                   | 3476.0 4           | 64 10              | 2407.83 | (4,5,6 <sup>+</sup> )             |                                                                                     |
|                                      |                                                   | 3593.2 7           | 24 8               | 2289.29 | (4 <sup>+</sup> )                 |                                                                                     |
|                                      |                                                   | 3771.4 5           | 34 8               | 2112.30 | 6 <sup>+</sup>                    |                                                                                     |
| 5902.9                               |                                                   | 3790.5 7           | 100                | 2112.30 | 6 <sup>+</sup>                    |                                                                                     |
| 5937.56                              | (5 <sup>+</sup> ,6 <sup>+</sup> ,7 <sup>+</sup> ) | 2177.6 3           | 90 20              | 3759.66 | (5,6,7)                           |                                                                                     |
|                                      |                                                   | 2592.6 2           | 60 10              | 3345.15 | (5,6 <sup>+</sup> )               |                                                                                     |
|                                      |                                                   | 3373.5 3           | 42 6               | 2564.13 | (5,6 <sup>+</sup> )               |                                                                                     |
|                                      |                                                   | 3825.0 2           | 100 10             | 2112.30 | 6 <sup>+</sup>                    |                                                                                     |
| 5951.6                               |                                                   | 4410.2 6           | 100                | 1541.24 | 4 <sup>+</sup>                    |                                                                                     |
| 5963.88                              | (6 <sup>+</sup> ,7 <sup>+</sup> )                 | 2200.5 4           | 23 4               | 3763.27 | (5,6,7)                           |                                                                                     |
|                                      |                                                   | 3190.8 1           | 100 10             | 2773.03 | 8 <sup>+</sup>                    |                                                                                     |
| 5971.3                               |                                                   | 3351.3 3           | 100                | 2619.96 | (5 <sup>-</sup> )                 |                                                                                     |
| 5982.4                               | (13 <sup>-</sup> )                                | 247.8              | 29 1               | 5734.7  | (12 <sup>-</sup> )                | (D)                                                                                 |
|                                      |                                                   | 478                | ≈40                | 5504.4  |                                   |                                                                                     |
|                                      |                                                   | 1342.1             | 100 4              | 4640.3  | (11 <sup>-</sup> )                | (Q)                                                                                 |
| 5982.45                              | (5,6 <sup>+</sup> )                               | 3870.1 2           | 100 13             | 2112.30 | 6 <sup>+</sup>                    | $E_\gamma, I_\gamma, \text{Mult.}: \text{from } (^{58}\text{Ni}, 2p2\alpha\gamma).$ |
|                                      |                                                   | 4440.8 6           | 29 6               | 1541.24 | 4 <sup>+</sup>                    |                                                                                     |
| 5999.58                              | (5 <sup>+</sup> ,6 <sup>+</sup> )                 | 2236.0 7           | 18 5               | 3763.27 | (5,6,7)                           |                                                                                     |
|                                      |                                                   | 3887.2 2           | 100 13             | 2112.30 | 6 <sup>+</sup>                    |                                                                                     |
|                                      |                                                   | 4458.4 6           | 28 6               | 1541.24 | 4 <sup>+</sup>                    |                                                                                     |
| 6047.28                              | (5 <sup>+</sup> ,6 <sup>+</sup> )                 | 3262.9 5           | 57 14              | 2784.00 | (4,5,6 <sup>+</sup> )             |                                                                                     |

Adopted Levels, Gammas (continued)

$\gamma(^{98}\text{Pd})$  (continued)

| <u>E<sub>i</sub>(level)</u> | <u>J<sub>i</sub><sup><math>\pi</math></sup></u> | <u>E<sub><math>\gamma</math></sub><sup><math>\dagger</math></sup></u> | <u>I<sub><math>\gamma</math></sub><sup><math>\dagger</math></sup></u> | <u>E<sub>f</sub></u> | <u>J<sub>f</sub><sup><math>\pi</math></sup></u> | <u>Mult.<sup>#</sup></u> | <u>Comments</u>                                                                        |
|-----------------------------|-------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------|----------------------|-------------------------------------------------|--------------------------|----------------------------------------------------------------------------------------|
| 6047.28                     | (5 <sup>+</sup> ,6 <sup>+</sup> )               | 3483.9 4                                                              | 29 7                                                                  | 2564.13              | (5,6 <sup>+</sup> )                             |                          |                                                                                        |
|                             |                                                 | 3639.2 4                                                              | 100 14                                                                | 2407.83              | (4,5,6 <sup>+</sup> )                           |                          |                                                                                        |
|                             |                                                 | 3757.5 4                                                              | 66 13                                                                 | 2289.29              | (4 <sup>+</sup> )                               |                          |                                                                                        |
| 6062.0                      |                                                 | 3949.6 4                                                              | 100                                                                   | 2112.30              | 6 <sup>+</sup>                                  |                          |                                                                                        |
| 6085.0                      |                                                 | 3520.8 4                                                              | 100                                                                   | 2564.13              | (5,6 <sup>+</sup> )                             |                          |                                                                                        |
| 6097.1                      |                                                 | 3476.6 3                                                              | 69 34                                                                 | 2619.96              | (5 <sup>-</sup> )                               |                          |                                                                                        |
|                             |                                                 | 3533.3 3                                                              | 100 21                                                                | 2564.13              | (5,6 <sup>+</sup> )                             |                          |                                                                                        |
| 6108.4                      |                                                 | 4567.0 6                                                              | 100                                                                   | 1541.24              | 4 <sup>+</sup>                                  |                          |                                                                                        |
| 6141.0                      |                                                 | 4599.6 4                                                              | 100                                                                   | 1541.24              | 4 <sup>+</sup>                                  |                          |                                                                                        |
| 6143.1                      |                                                 | 4030.7 4                                                              | 100                                                                   | 2112.30              | 6 <sup>+</sup>                                  |                          |                                                                                        |
| 6186.8                      |                                                 | 3566.8 4                                                              | 100                                                                   | 2619.96              | (5 <sup>-</sup> )                               |                          |                                                                                        |
| 6200.0                      |                                                 | 3426.9 3                                                              | 100                                                                   | 2773.03              | 8 <sup>+</sup>                                  |                          |                                                                                        |
| 6230.4                      |                                                 | 3822.5 7                                                              | 100                                                                   | 2407.83              | (4,5,6 <sup>+</sup> )                           |                          |                                                                                        |
| 6262.6                      | (5 <sup>+</sup> ,6 <sup>+</sup> )               | 4150.3 3                                                              | 100 14                                                                | 2112.30              | 6 <sup>+</sup>                                  |                          |                                                                                        |
|                             |                                                 | 4721.0 7                                                              | 27 9                                                                  | 1541.24              | 4 <sup>+</sup>                                  |                          |                                                                                        |
| 6315.9                      |                                                 | 4203.5 3                                                              | 100                                                                   | 2112.30              | 6 <sup>+</sup>                                  |                          |                                                                                        |
| 6319.2                      | (14)                                            | 336.9                                                                 | 100                                                                   | 5982.4               | (13 <sup>-</sup> )                              | (D)                      | E <sub><math>\gamma</math></sub> ,Mult.: from ( <sup>58</sup> Ni,2p2 $\alpha\gamma$ ). |
| 6350.3                      |                                                 | 4808.9 5                                                              | 100                                                                   | 1541.24              | 4 <sup>+</sup>                                  |                          |                                                                                        |
| 6424.1                      |                                                 | 4882.7 6                                                              | 100                                                                   | 1541.24              | 4 <sup>+</sup>                                  |                          |                                                                                        |
| 6450.0                      |                                                 | 4337.6 6                                                              | 100                                                                   | 2112.30              | 6 <sup>+</sup>                                  |                          |                                                                                        |
| 6625.5                      | (15 <sup>+</sup> )                              | 768.7                                                                 | 31 4                                                                  | 5857.4               | (14 <sup>+</sup> )                              | (D)                      |                                                                                        |
|                             |                                                 | 925.9                                                                 | 100 2                                                                 | 5698.9               | 14 <sup>+</sup>                                 | (D)                      |                                                                                        |
| 6748.5                      | (16 <sup>+</sup> )                              | 123.0                                                                 | 24 1                                                                  | 6625.5               | (15 <sup>+</sup> )                              | (D)                      |                                                                                        |
|                             |                                                 | 891.4                                                                 | 68 3                                                                  | 5857.4               | (14 <sup>+</sup> )                              | (Q)                      |                                                                                        |
|                             |                                                 | 1049.2                                                                | 100 3                                                                 | 5698.9               | 14 <sup>+</sup>                                 | (Q)                      |                                                                                        |
| 6801.7                      | (15 <sup>+</sup> )                              | 944.1                                                                 | 100 5                                                                 | 5857.4               | (14 <sup>+</sup> )                              | (D)                      |                                                                                        |
|                             |                                                 | 1103.1                                                                | 44 5                                                                  | 5698.9               | 14 <sup>+</sup>                                 | (D)                      |                                                                                        |
| 7157.5                      | (15)                                            | 838.5                                                                 | 100 4                                                                 | 6319.2               | (14)                                            | (D)                      |                                                                                        |
|                             |                                                 | 1458                                                                  | ≈86                                                                   | 5698.9               | 14 <sup>+</sup>                                 |                          |                                                                                        |
| 7231.9                      | (15)                                            | 912.7                                                                 | 100                                                                   | 6319.2               | (14)                                            | (D)                      |                                                                                        |
| 7346.3                      | (16 <sup>+</sup> )                              | 545                                                                   | ≈170                                                                  | 6801.7               | (15 <sup>+</sup> )                              |                          |                                                                                        |
|                             |                                                 | 720.5&                                                                | ≈270&                                                                 | 6625.5               | (15 <sup>+</sup> )                              |                          |                                                                                        |
|                             |                                                 | 1647.5                                                                | 100 7                                                                 | 5698.9               | 14 <sup>+</sup>                                 | (Q)                      |                                                                                        |
| 7865.1                      |                                                 | 519                                                                   | 100                                                                   | 7346.3               | (16 <sup>+</sup> )                              |                          |                                                                                        |
| 8339.9                      | (17 <sup>+</sup> )                              | 993                                                                   | 100                                                                   | 7346.3               | (16 <sup>+</sup> )                              |                          |                                                                                        |
| 8506.4                      | (18 <sup>+</sup> )                              | 166                                                                   | ≈25                                                                   | 8339.9               | (17 <sup>+</sup> )                              |                          |                                                                                        |
|                             |                                                 | 1160.3                                                                | 100 5                                                                 | 7346.3               | (16 <sup>+</sup> )                              | (Q)                      |                                                                                        |
| 8612.8                      |                                                 | 748                                                                   | ≈20                                                                   | 7865.1               |                                                 |                          |                                                                                        |
|                             |                                                 | 1266.5                                                                | 100 5                                                                 | 7346.3               | (16 <sup>+</sup> )                              |                          |                                                                                        |
| 9134.9                      |                                                 | 522                                                                   | 100                                                                   | 8612.8               |                                                 |                          |                                                                                        |
| 10862.9                     |                                                 | 1728                                                                  | 100                                                                   | 9134.9               |                                                 |                          |                                                                                        |

**Adopted Levels, Gammas (continued)** $\gamma(^{98}\text{Pd})$  (continued)

<sup>†</sup> From  $^{98}\text{Ag}$   $\varepsilon$  decay up to 6450 level and from ( $^{58}\text{Ni}, 2\text{p}2\alpha\gamma$ ) above that, unless otherwise noted.

<sup>‡</sup> Poor fit. Level-energy difference from least-squares adjustment procedure (see  $^{98}\text{Ag}$   $\varepsilon$  decay dataset) deviates by 0.3 to 1 keV from the quoted  $E_\gamma$ .

<sup>#</sup> From  $\gamma(\theta)$  in ( $^{32}\text{S}, 2\text{p}2\text{n}\gamma$ ) and ( $\alpha, 2\text{n}\gamma$ ) up to 5698 level and from intensity ratio in ( $^{58}\text{Ni}, 2\text{p}2\alpha\gamma$ ) for levels above that, unless otherwise noted. Mult=Q indicates stretched quadrupole (most likely E2), and mult=D or D+Q indicates  $\Delta J=1$  transition.

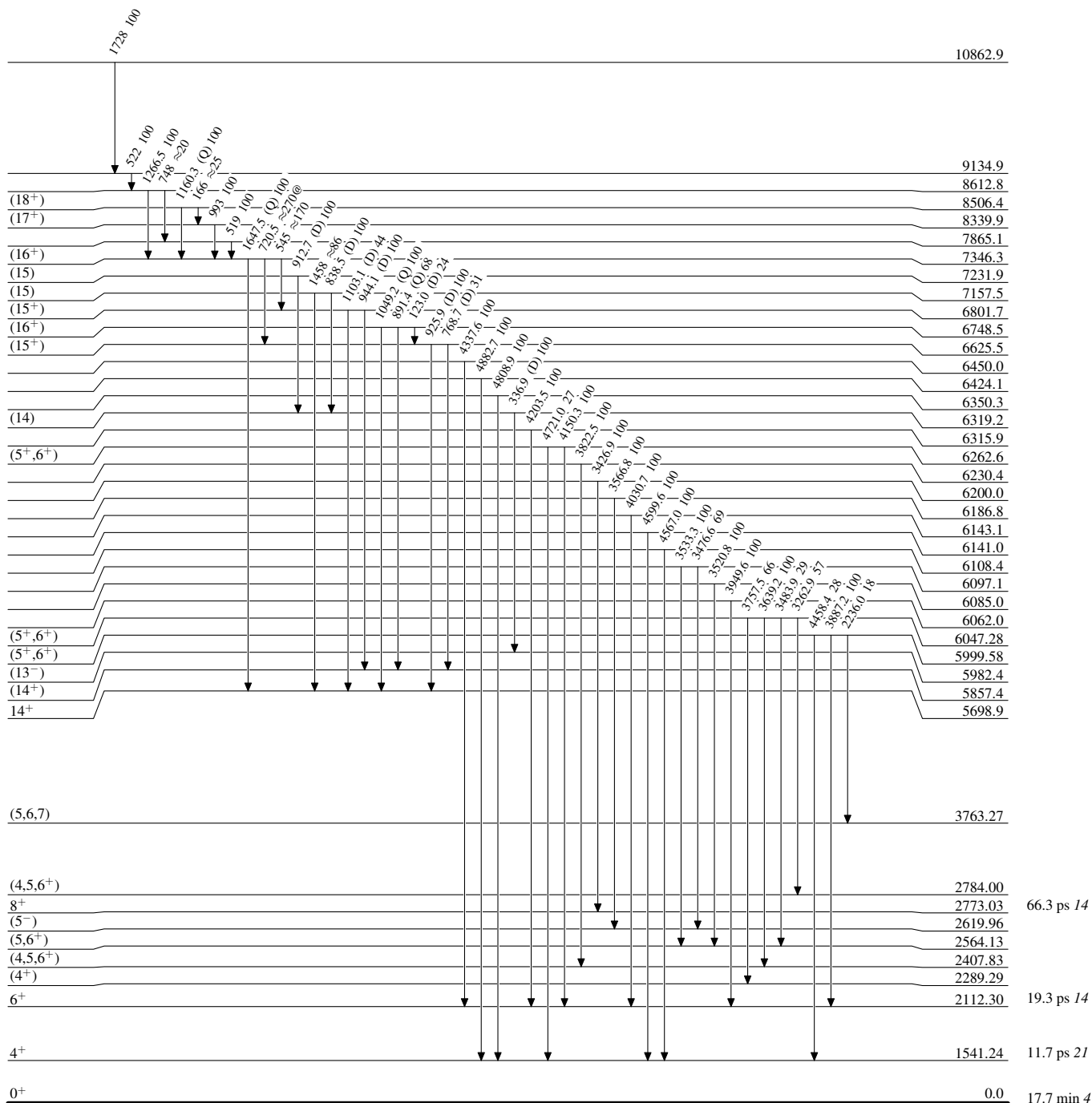
<sup>@</sup> Total theoretical internal conversion coefficients, calculated using the BrIcc code ([2008Ki07](#)) with Frozen orbital approximation based on  $\gamma$ -ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

<sup>&</sup> Multiply placed with intensity suitably divided.

<sup>a</sup> Placement of transition in the level scheme is uncertain.

Adopted Levels, GammasLevel Scheme

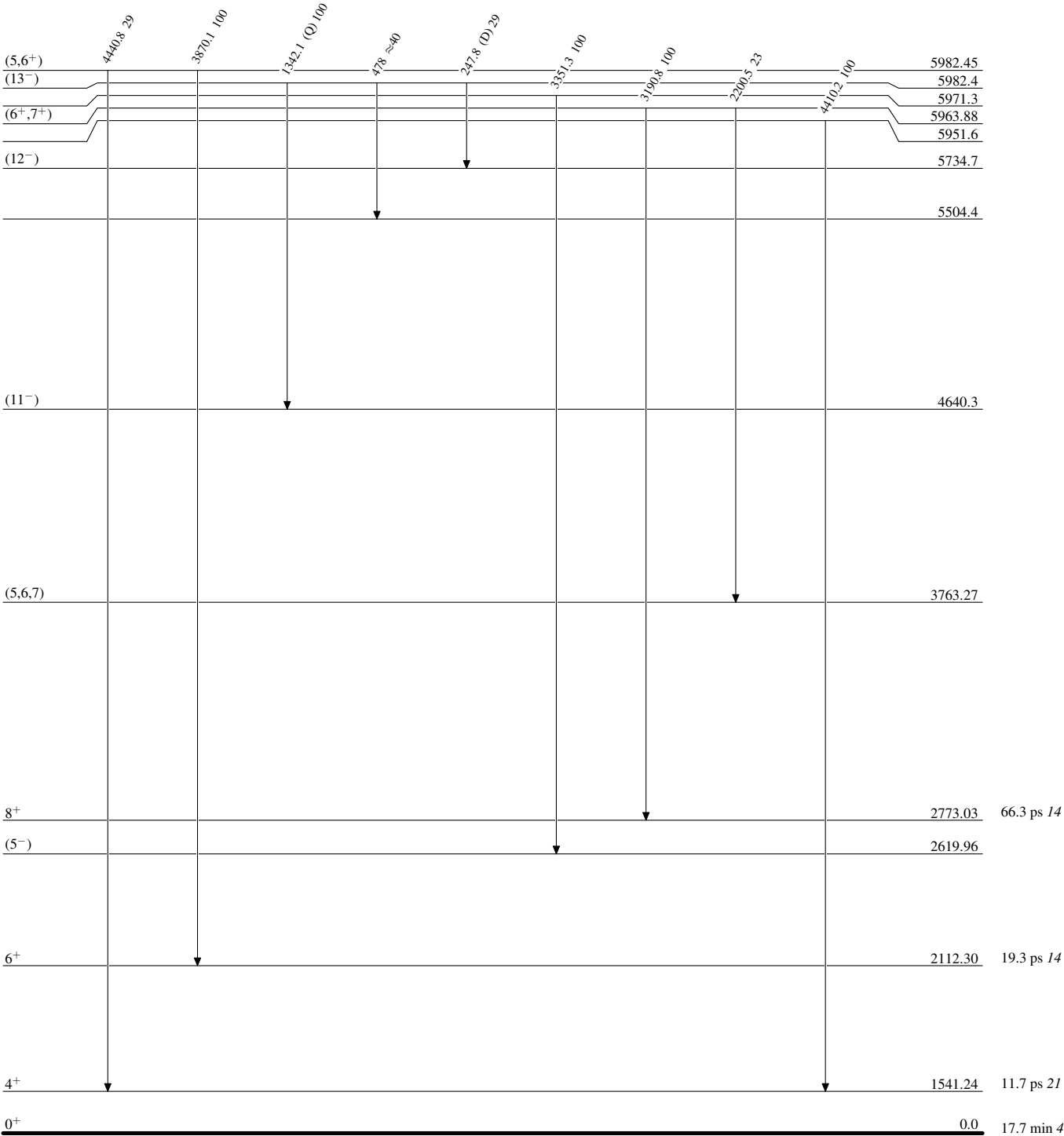
Intensities: Relative photon branching from each level  
 @ Multiply placed: intensity suitably divided



Adopted Levels, Gammas

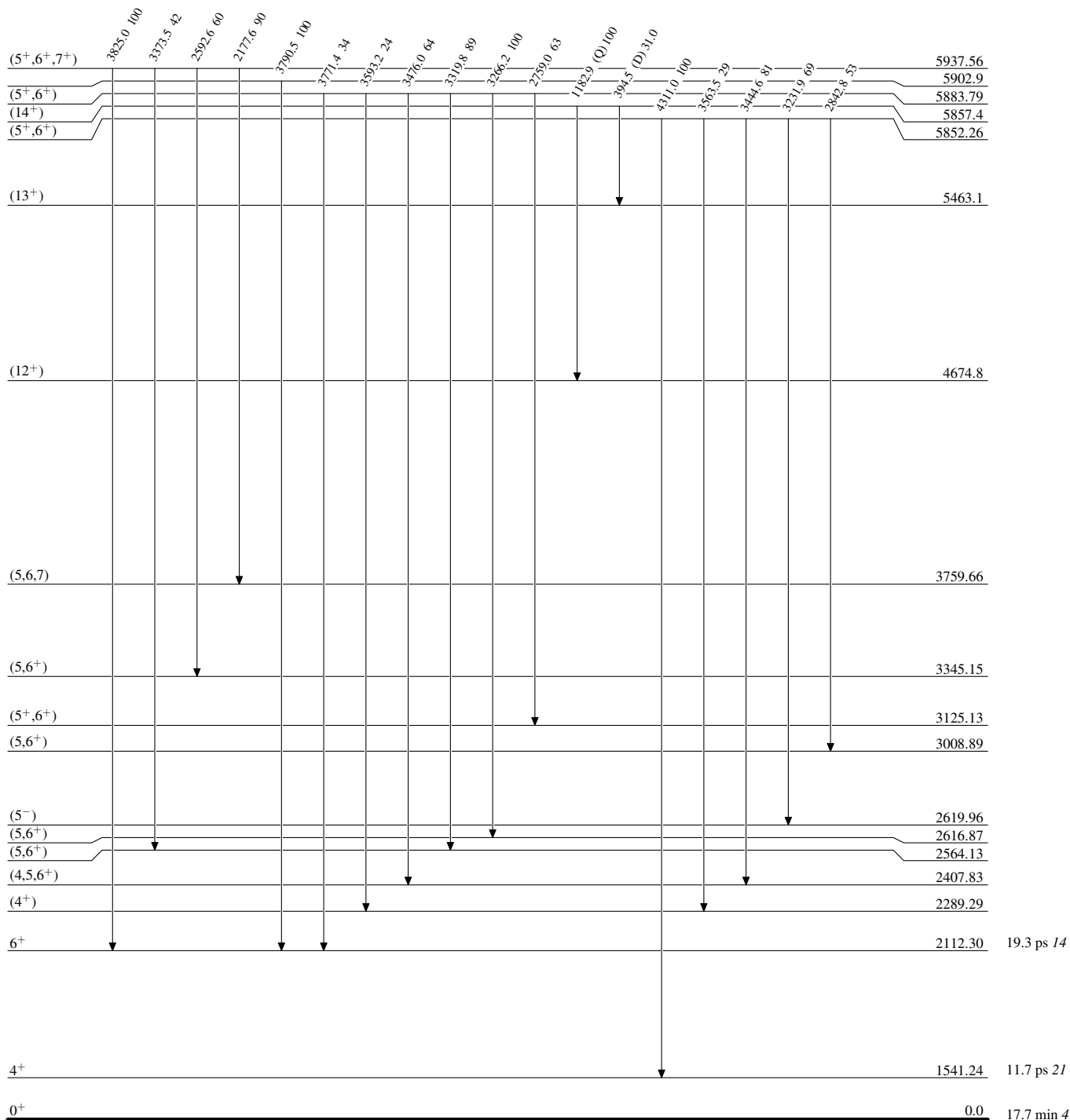
Level Scheme (continued)

Intensities: Relative photon branching from each level  
@ Multiply placed: intensity suitably divided



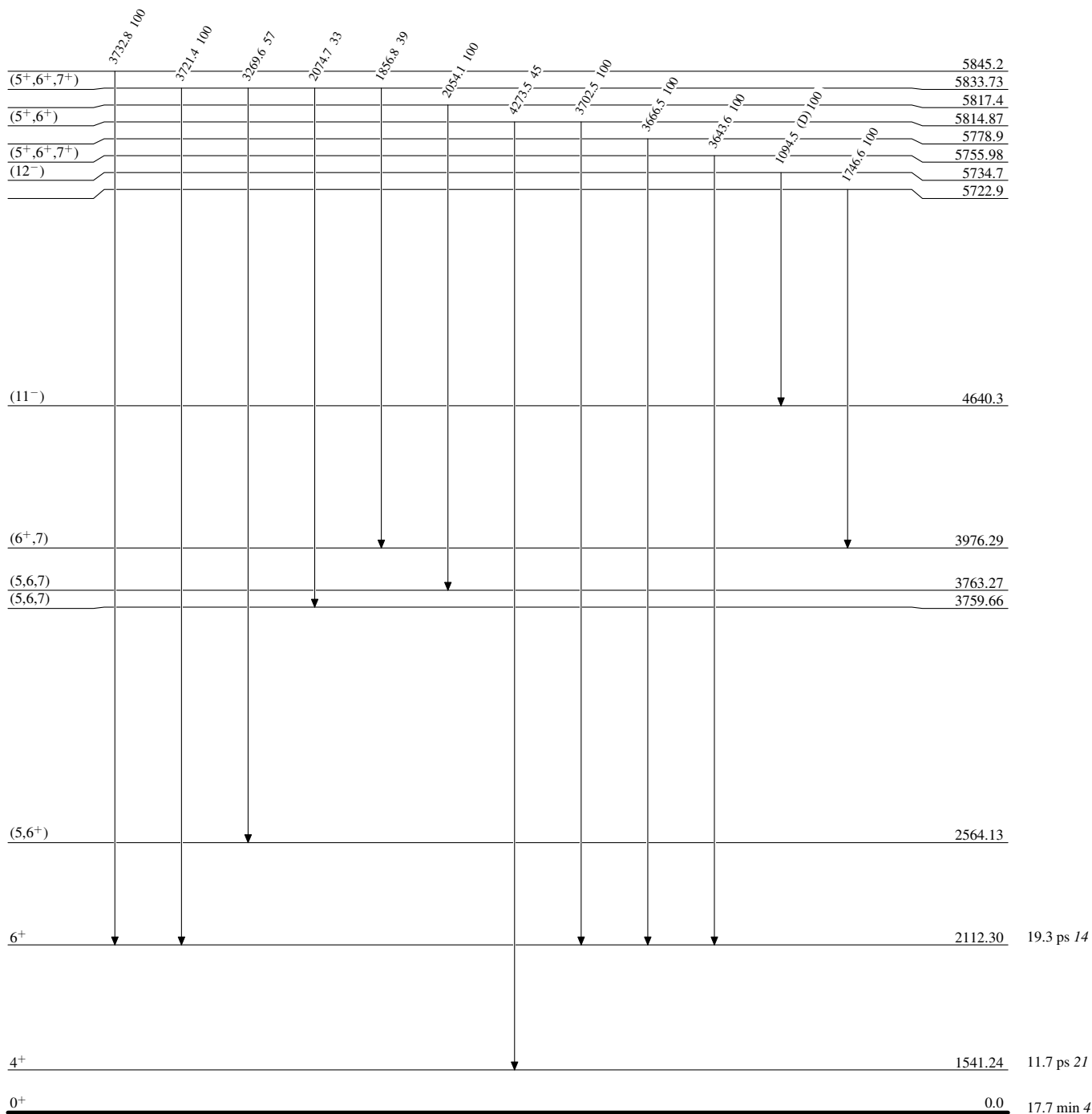
**Adopted Levels, Gammas****Level Scheme (continued)**

Intensities: Relative photon branching from each level  
@ Multiply placed: intensity suitably divided



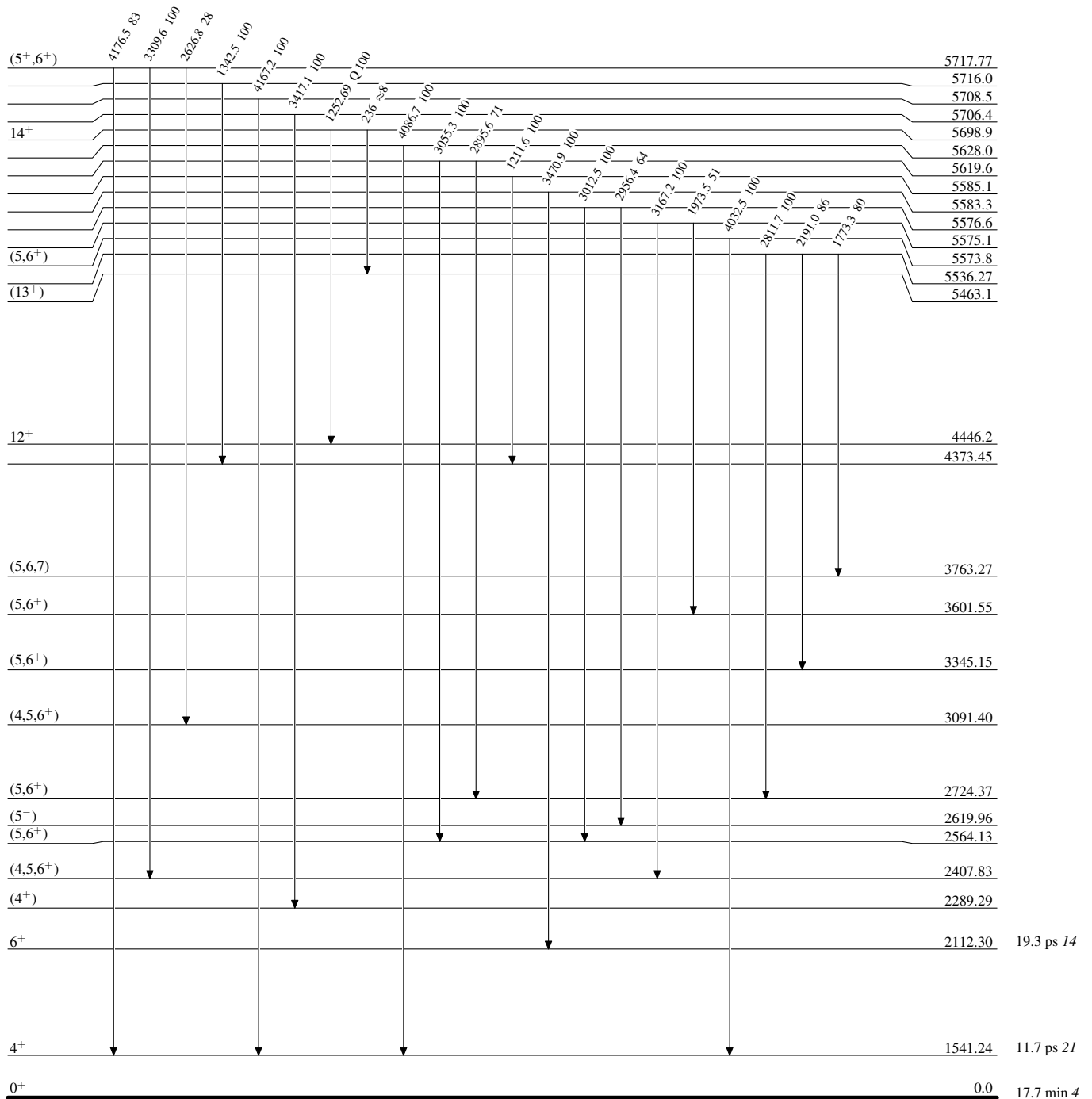
Adopted Levels, GammasLevel Scheme (continued)

Intensities: Relative photon branching from each level  
@ Multiply placed: intensity suitably divided

 $^{98}_{46}\text{Pd}_{52}$

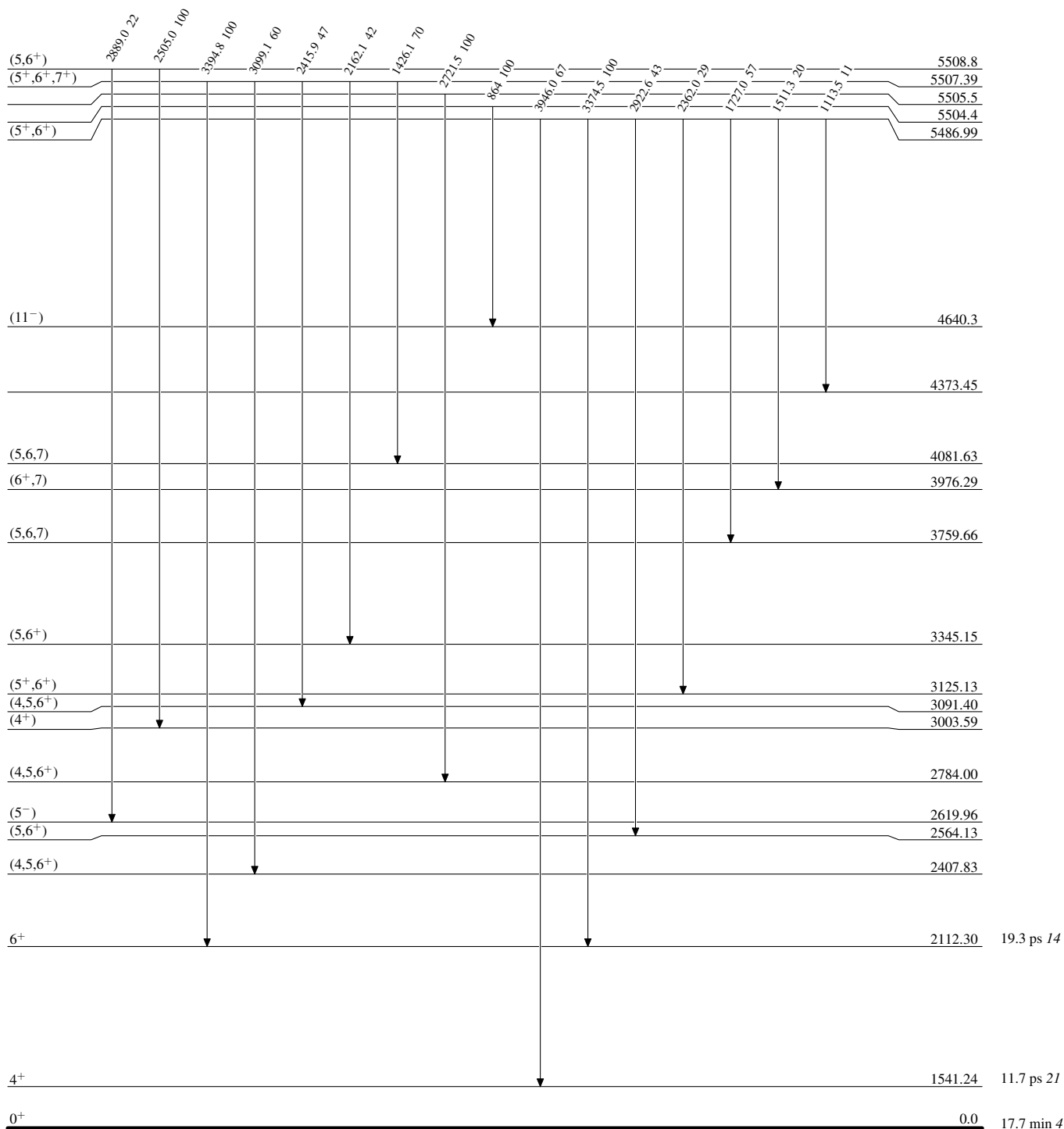
Adopted Levels, GammasLevel Scheme (continued)

Intensities: Relative photon branching from each level  
 @ Multiply placed: intensity suitably divided

 $^{98}_{46}\text{Pd}_{52}$

**Adopted Levels, Gammas****Level Scheme (continued)**

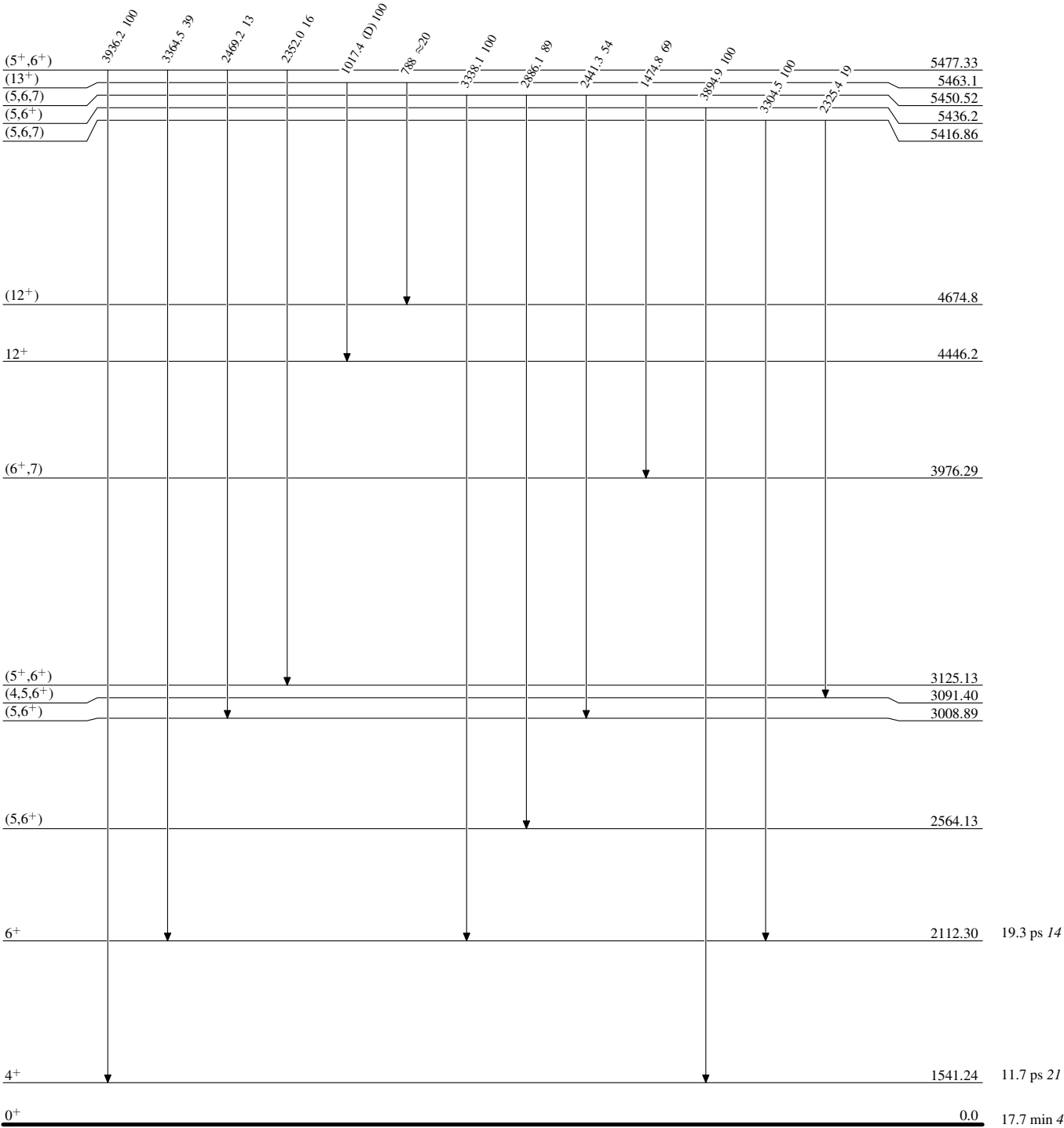
Intensities: Relative photon branching from each level  
@ Multiply placed: intensity suitably divided



**Adopted Levels, Gammas**

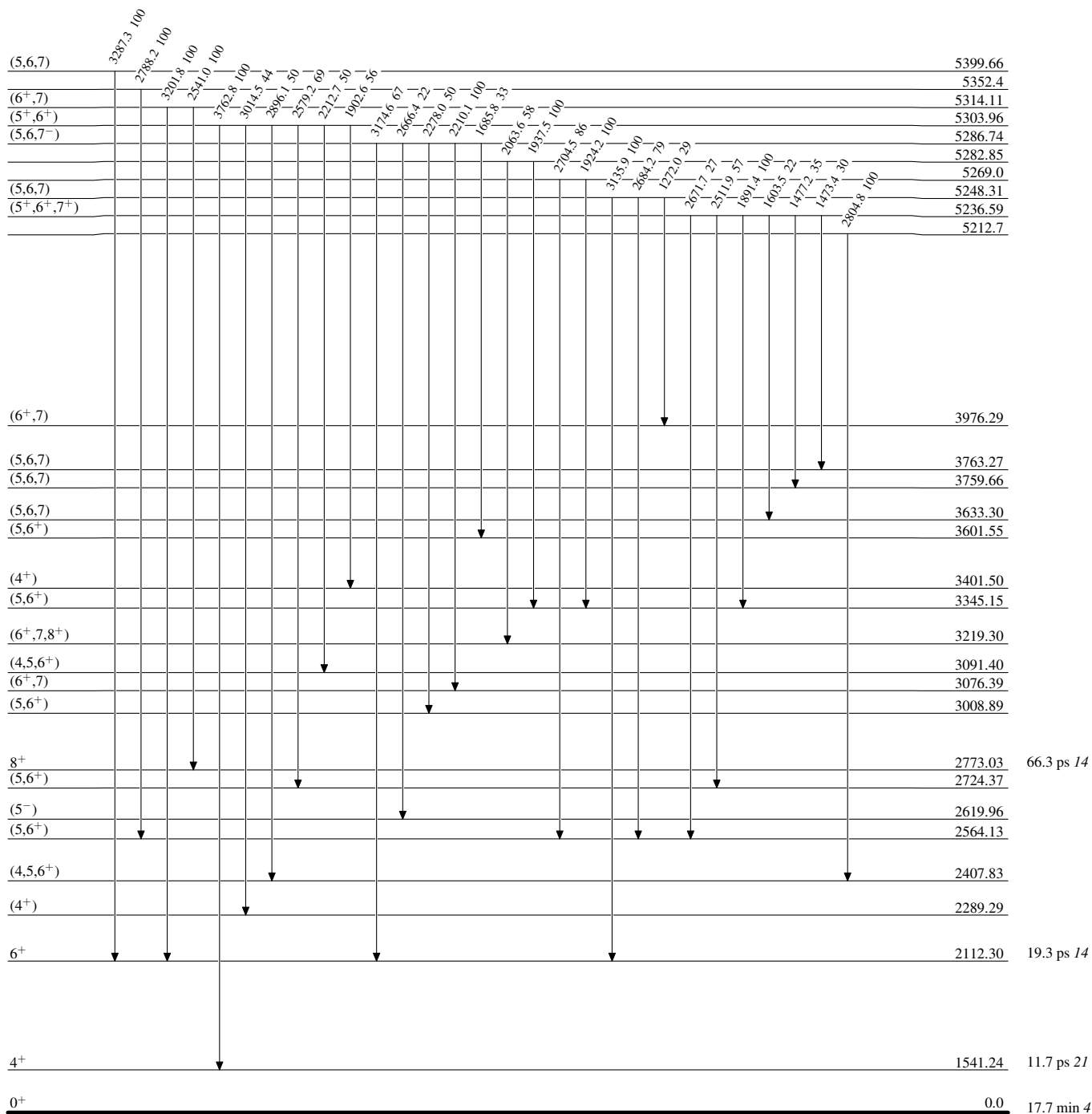
Level Scheme (continued)

Intensities: Relative photon branching from each level  
@ Multiply placed: intensity suitably divided



Adopted Levels, GammasLevel Scheme (continued)

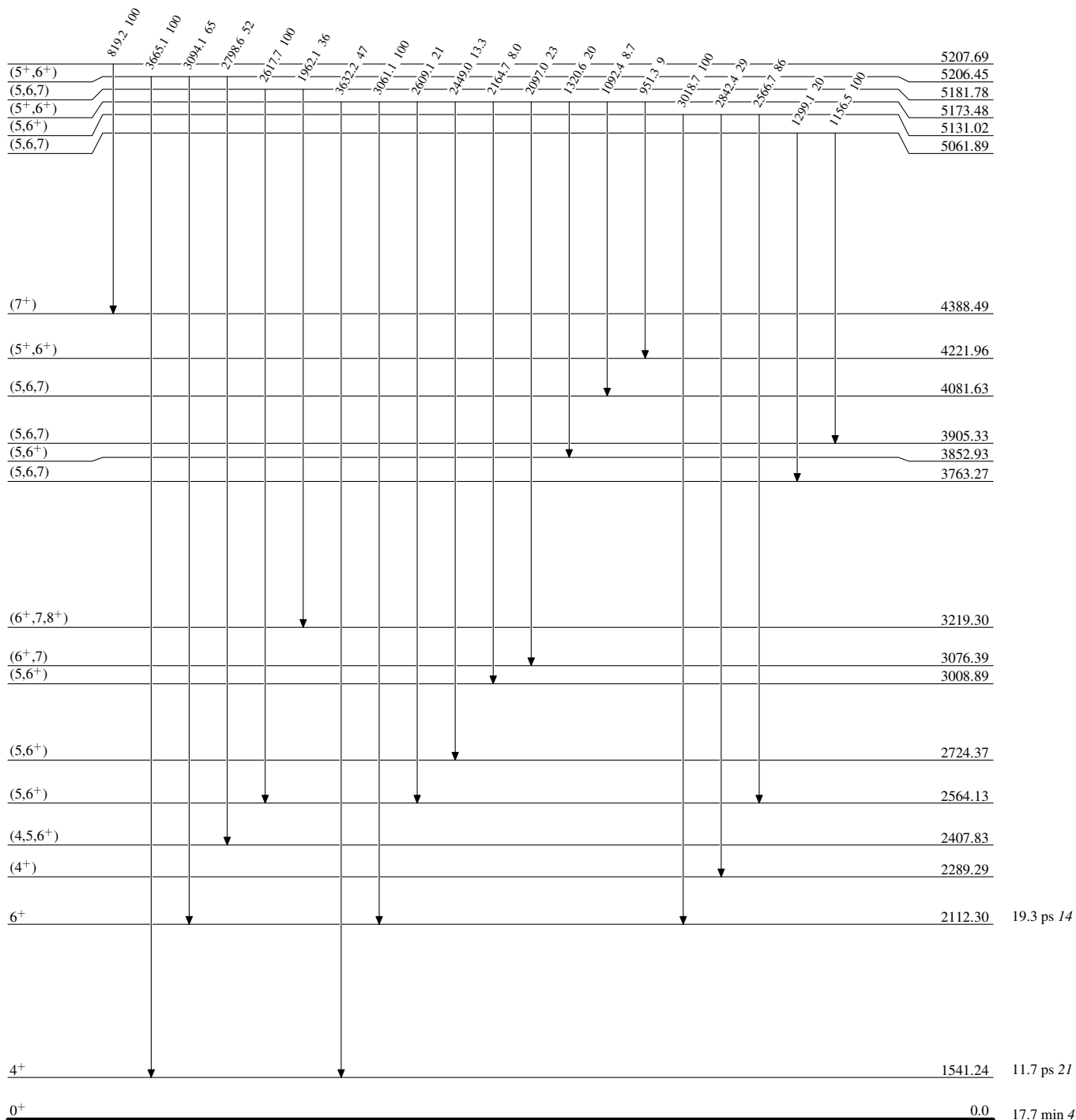
Intensities: Relative photon branching from each level  
 @ Multiply placed: intensity suitably divided

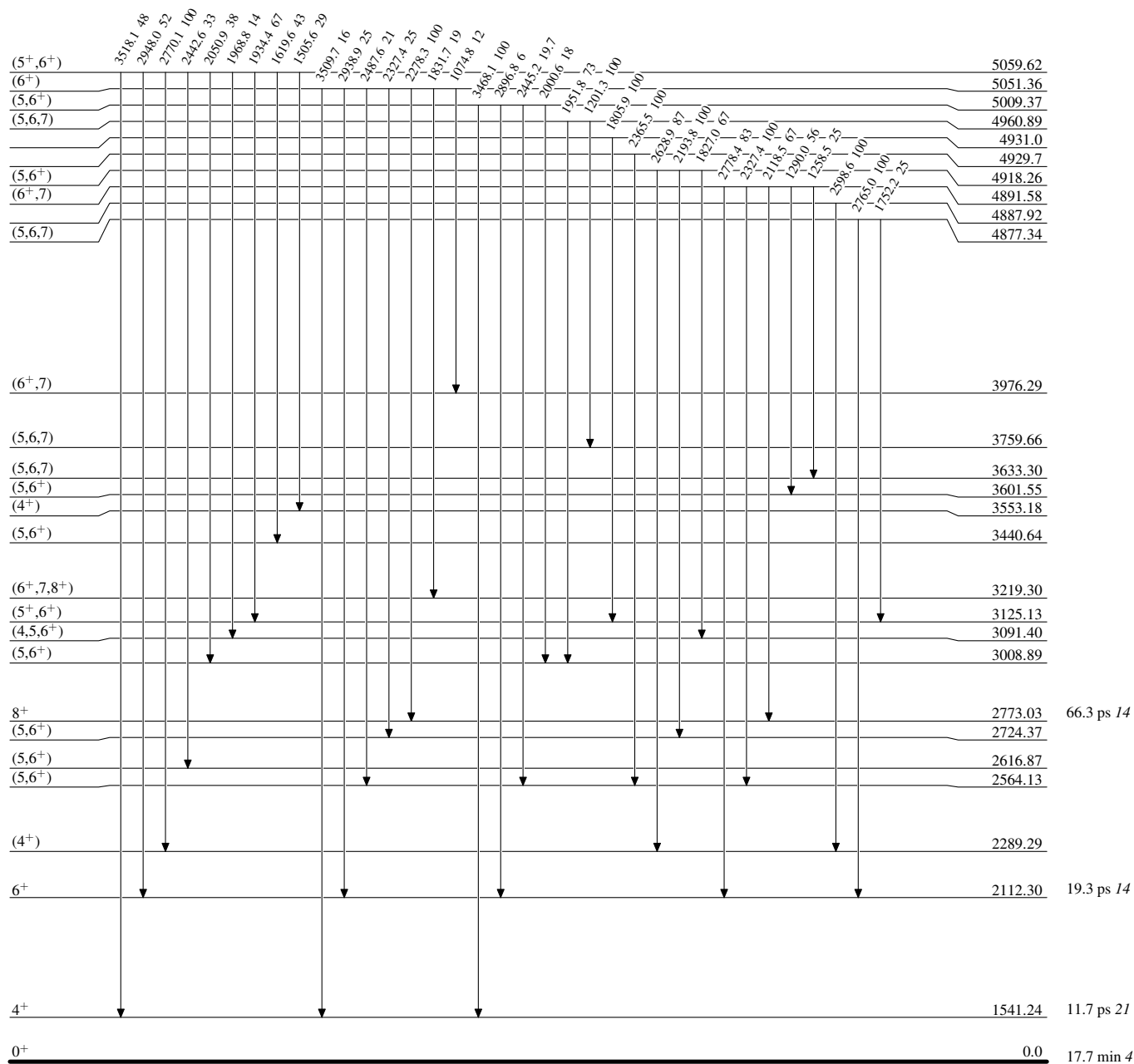


Adopted Levels, GammasLevel Scheme (continued)

Intensities: Relative photon branching from each level

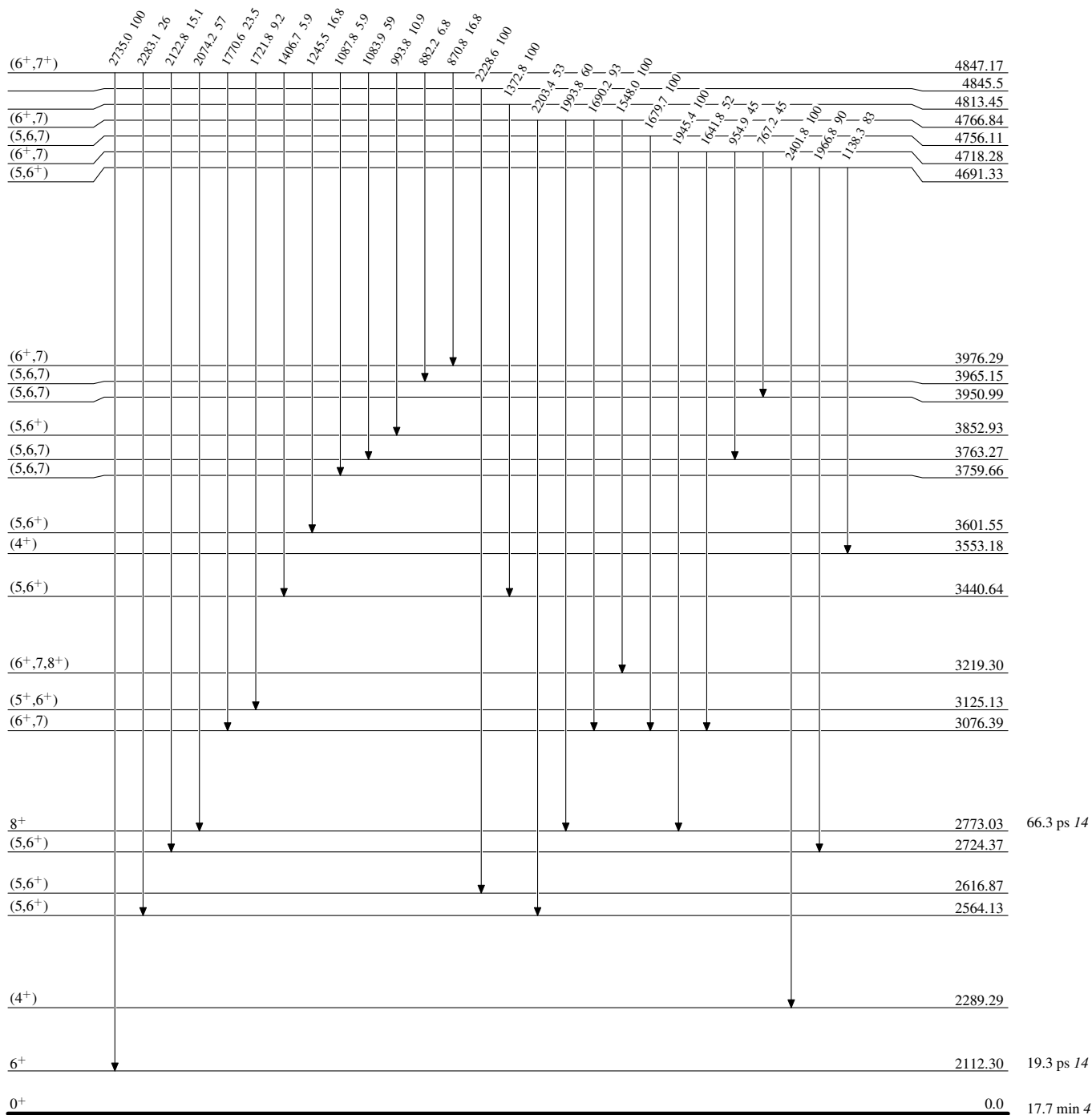
@ Multiply placed: intensity suitably divided





Adopted Levels, GammasLevel Scheme (continued)

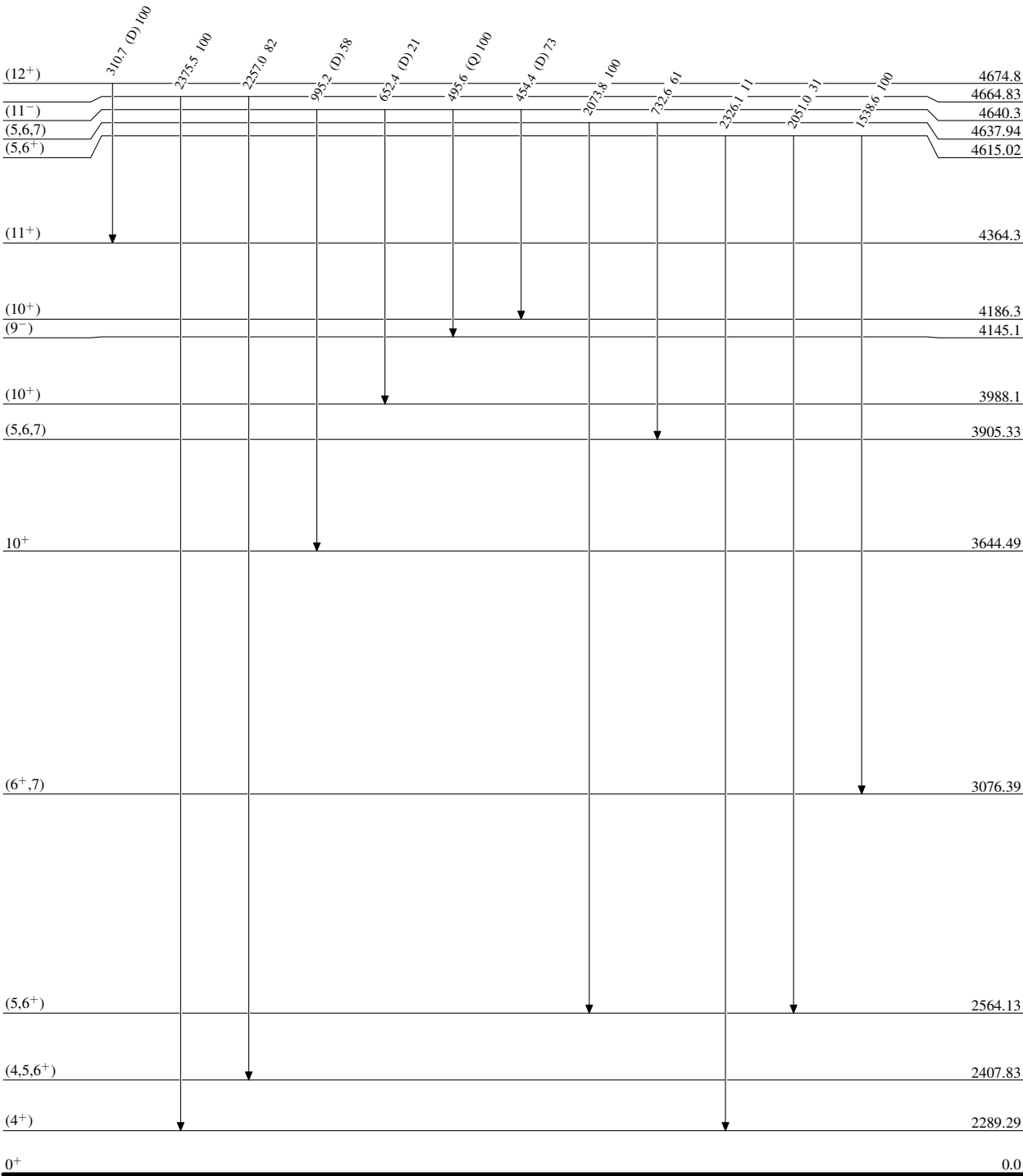
Intensities: Relative photon branching from each level  
 @ Multiply placed: intensity suitably divided



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level  
@ Multiply placed: intensity suitably divided



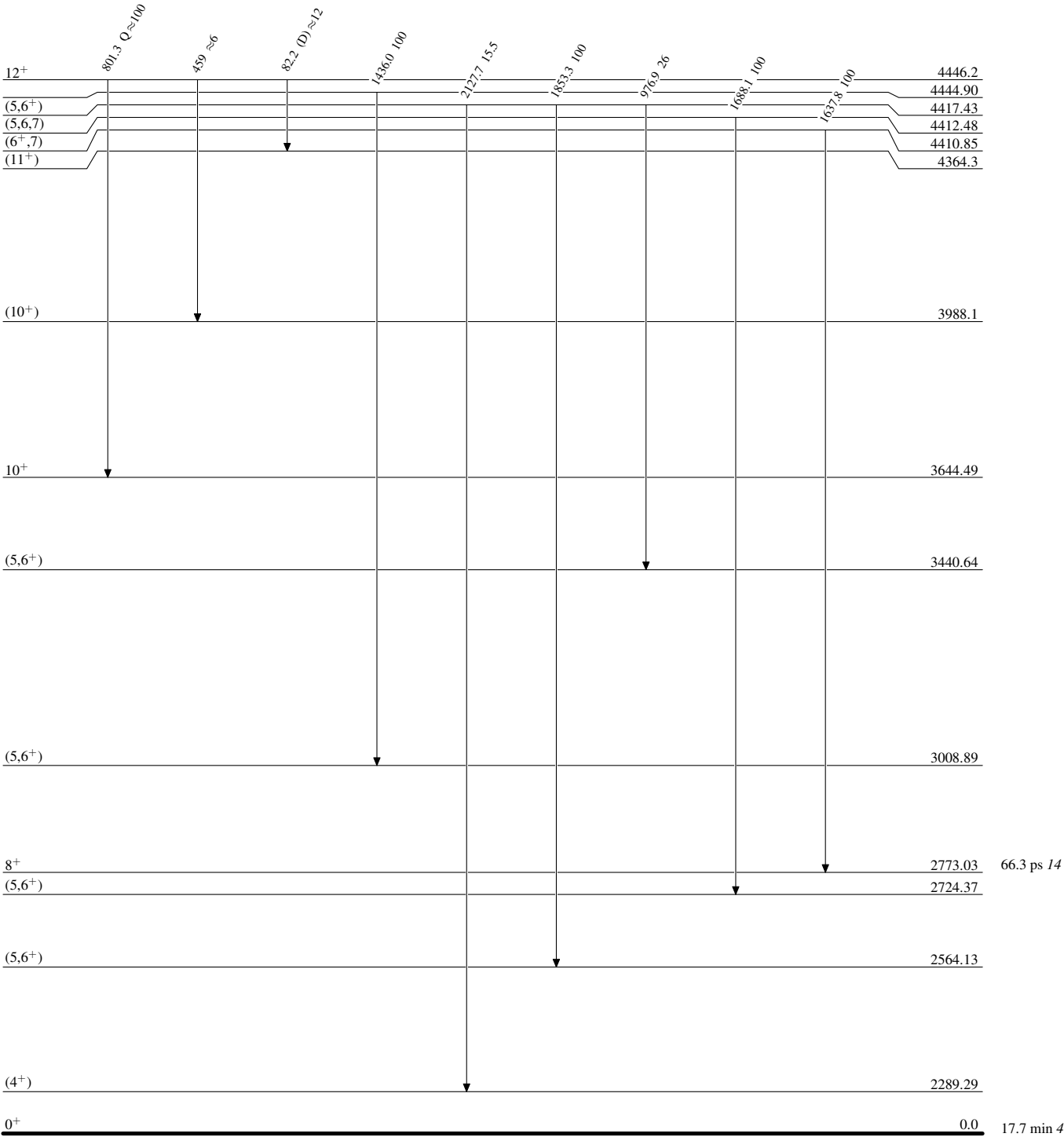




Adopted Levels, Gammas

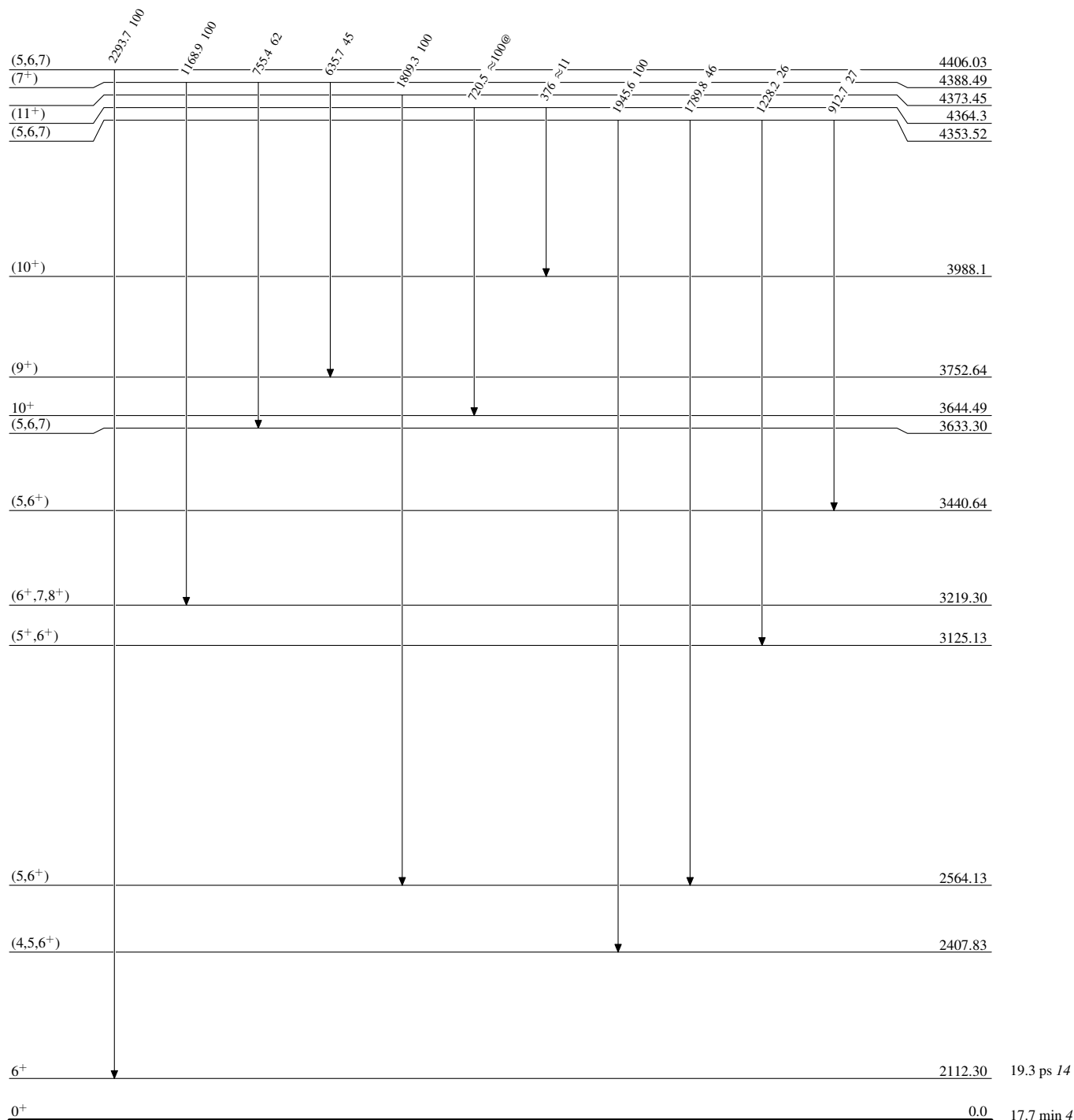
Level Scheme (continued)

Intensities: Relative photon branching from each level  
@ Multiply placed: intensity suitably divided



**Adopted Levels, Gammas****Level Scheme (continued)**

Intensities: Relative photon branching from each level  
 @ Multiply placed: intensity suitably divided



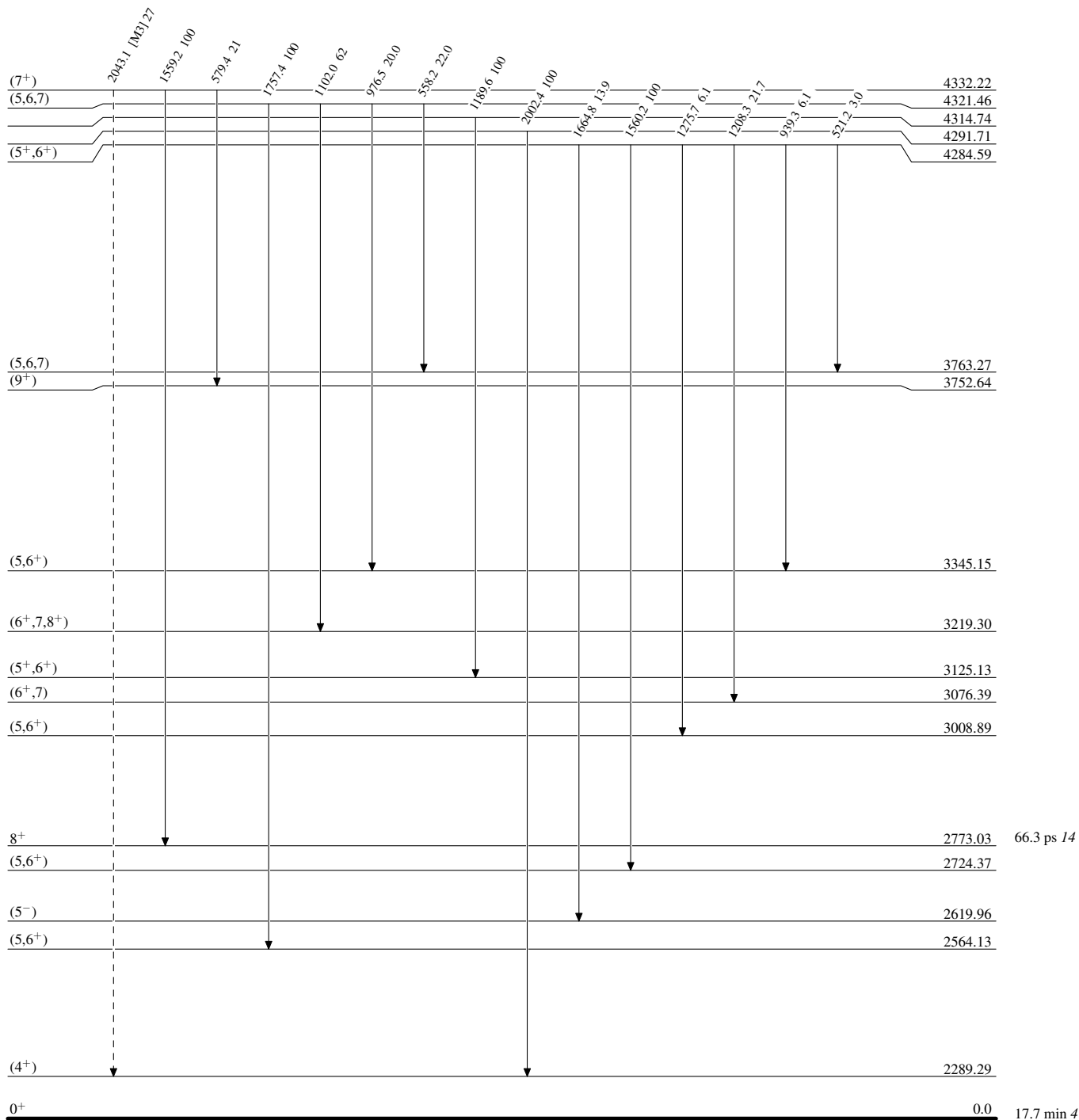
**Adopted Levels, Gammas**

Legend

**Level Scheme (continued)**

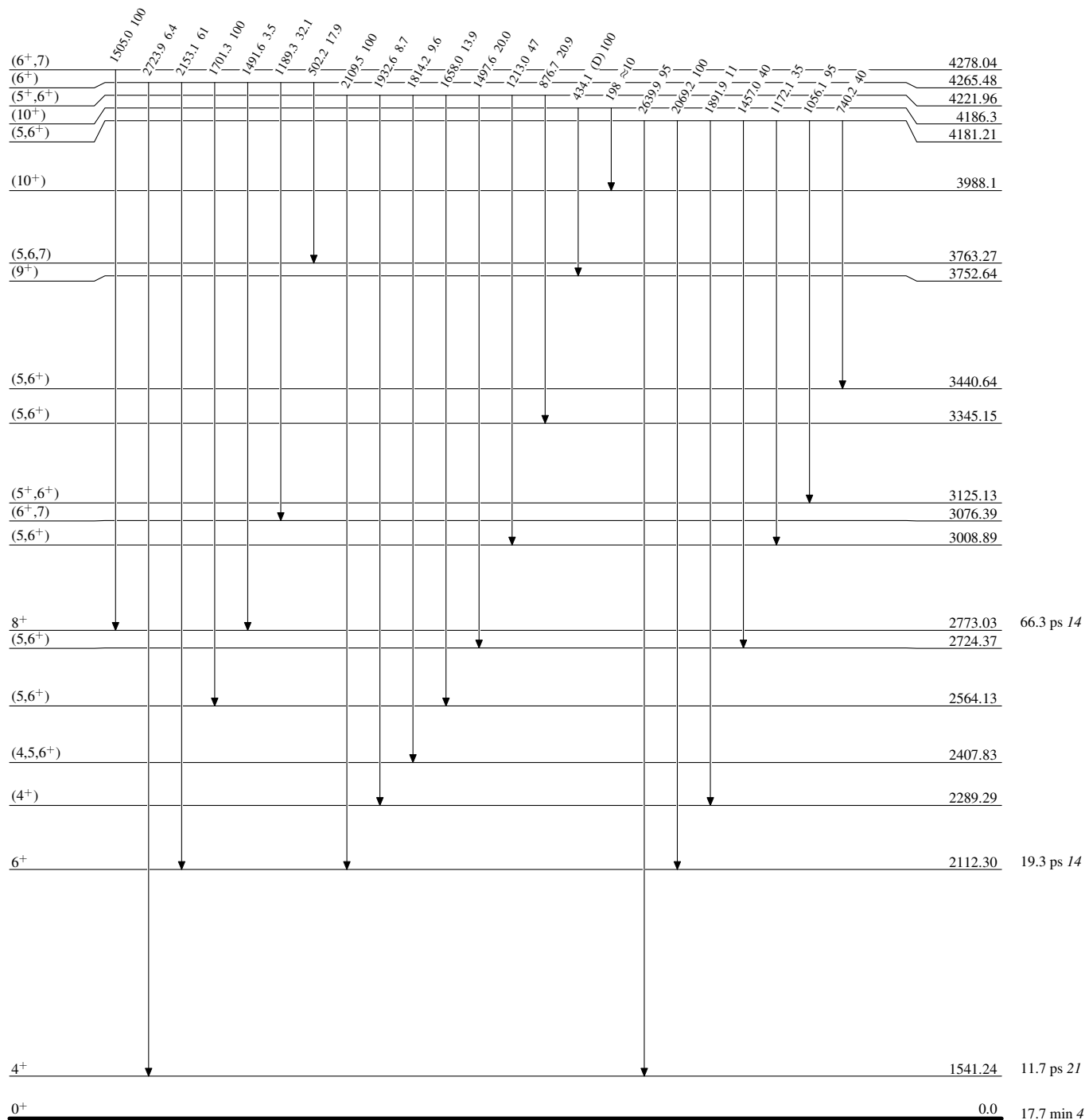
Intensities: Relative photon branching from each level  
@ Multiply placed: intensity suitably divided

-----►  $\gamma$  Decay (Uncertain)



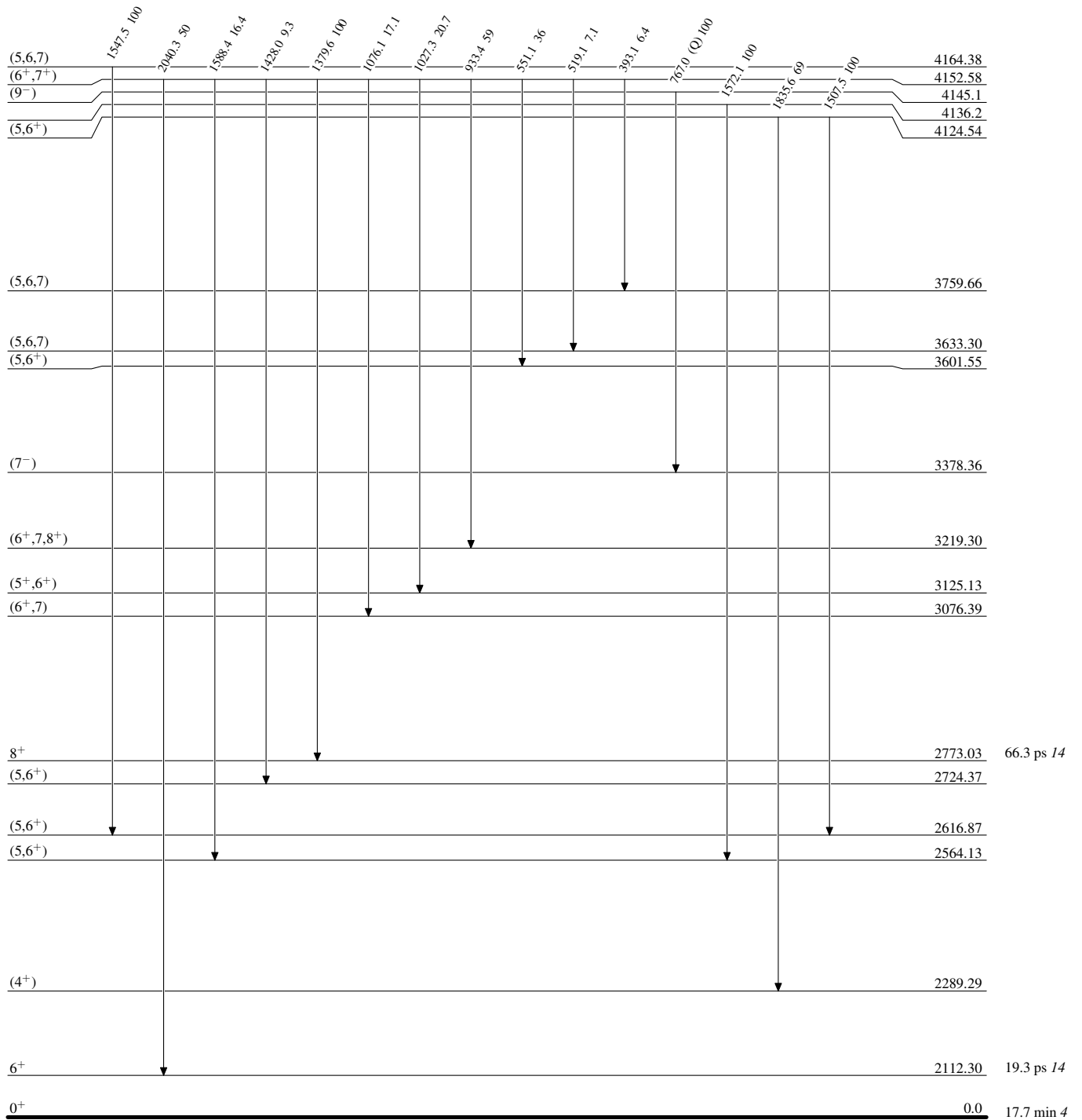
Adopted Levels, GammasLevel Scheme (continued)

Intensities: Relative photon branching from each level  
@ Multiply placed: intensity suitably divided



**Adopted Levels, Gammas****Level Scheme (continued)**

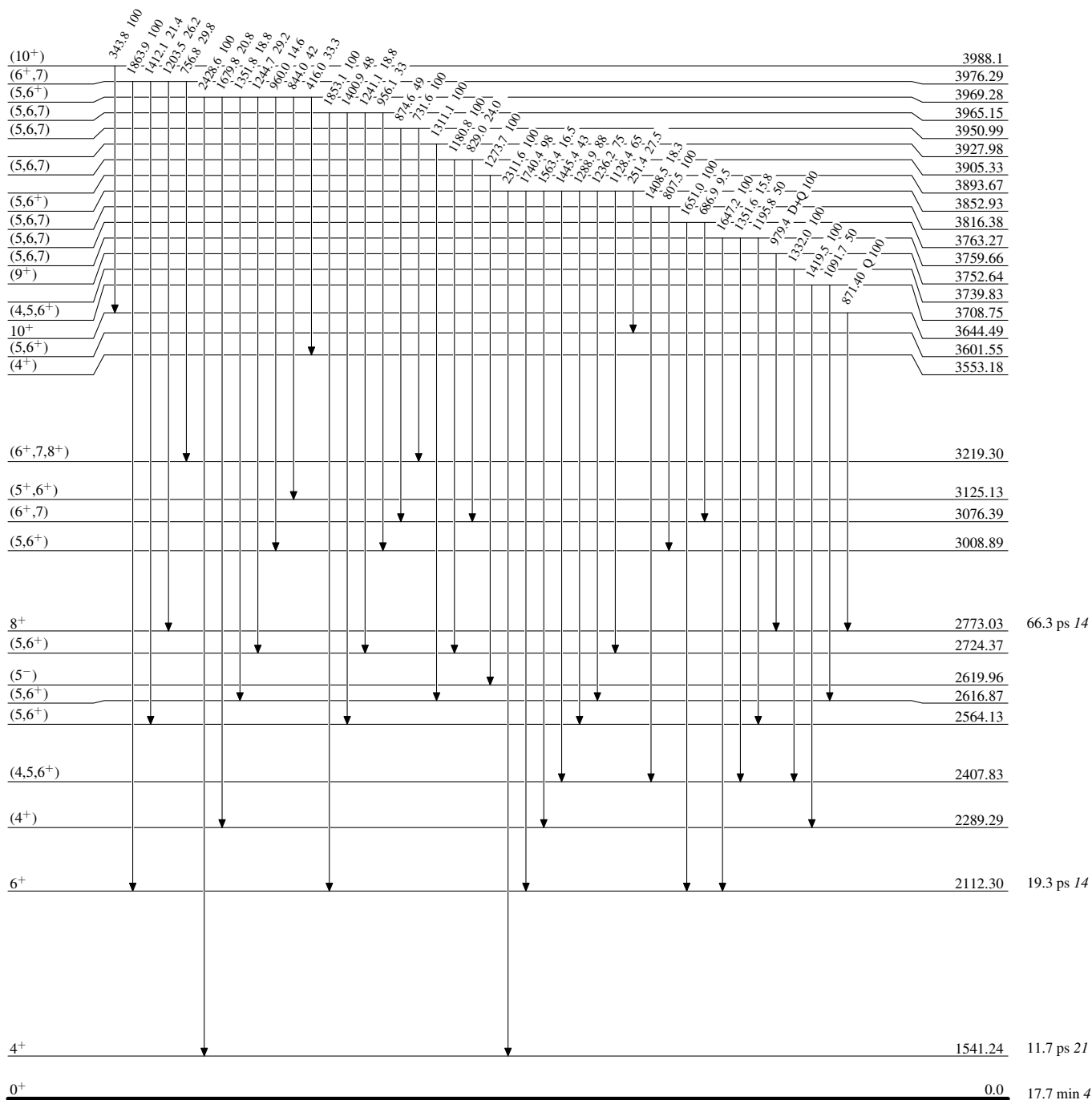
Intensities: Relative photon branching from each level  
@ Multiply placed: intensity suitably divided





**Adopted Levels, Gammas****Level Scheme (continued)**

Intensities: Relative photon branching from each level  
@ Multiply placed: intensity suitably divided



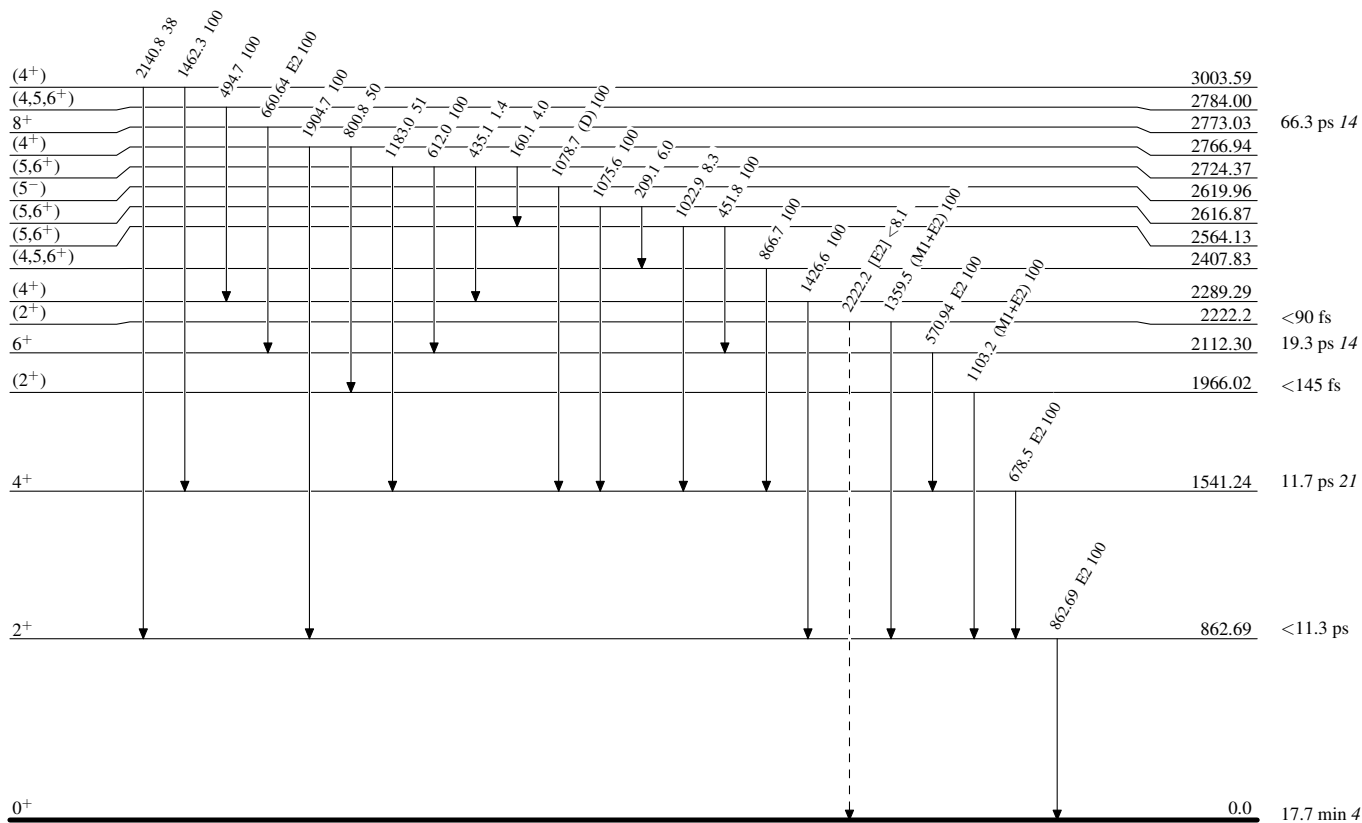


**Adopted Levels, Gammas**

Legend

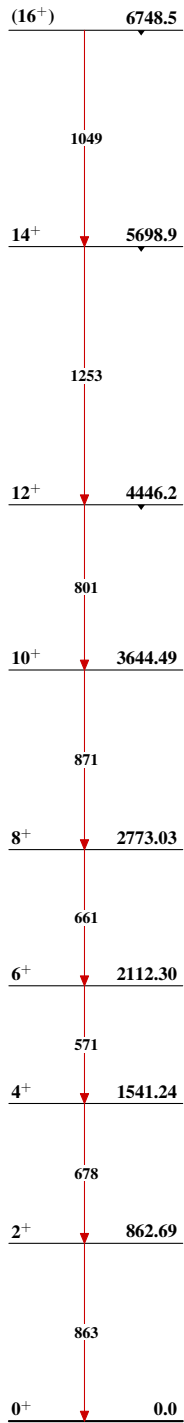
**Level Scheme (continued)**

Intensities: Relative photon branching from each level  
@ Multiplied: intensity suitably divided

-----►  $\gamma$  Decay (Uncertain) $^{98}_{46}\text{Pd}_{52}$

Adopted Levels, Gammas

Band(A): Yrast cascade



$^{98}_{46}\text{Pd}_{52}$