

Adopted Levels, Gammas

| Type            | Author                | History | Citation           | Literature Cutoff Date |
|-----------------|-----------------------|---------|--------------------|------------------------|
| Full Evaluation | E. Browne, J. K. Tuli |         | NDS 145, 25 (2017) | 1-Jul-2017             |

$Q(\beta^-) = -5470$  8;  $S(n) = 8933$  7;  $S(p) = 6296$  13;  $Q(\alpha) = -1150$  11    [2017Wa10](#)

 $^{99}\text{Pd}$  LevelsCross Reference (XREF) Flags

A  $^{99}\text{Ag } \beta^+$  decay  
 B (HI,xn $\gamma$ )  
 C  $^{96}\text{Ru}(\alpha, n\gamma)$

| E(level) <sup>†</sup>   | J $\pi^a$                                                  | T <sub>1/2</sub> | XREF | Comments                                                                                                                                                                                                                                                                                                                                               |
|-------------------------|------------------------------------------------------------|------------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0.0                     | (5/2) <sup>+</sup>                                         | 21.4 min 2       | ABC  | % $\varepsilon$ +% $\beta^+$ =100<br>$J^\pi$ : log $ft = 5.2$ to 200.4 level which decays by M1 to 9/2 <sup>+</sup> . log $ft = 5.8$ to 1527.4 level which decays to (1/2) <sup>-</sup> . Syst.<br>T <sub>1/2</sub> : from $\gamma(t)$ ( <a href="#">1969Ph01</a> ).<br>$J^\pi$ : from excit; $\gamma(\theta)$ ; syst; M1+E2 $\gamma$ from $\pi = +$ . |
| 219.89 8                | (3/2) <sup>+</sup>                                         |                  | ABC  | $J^\pi$ : log $ft < 5.9$ from (9/2) <sup>+</sup> parent, M1 $\gamma$ to (5/2) <sup>+</sup> g.s..                                                                                                                                                                                                                                                       |
| 264.382 <sup>‡</sup> 25 | (7/2) <sup>+</sup>                                         |                  | ABC  | $J^\pi$ : excit; $\gamma(\theta)$ .                                                                                                                                                                                                                                                                                                                    |
| 463.78 6                | (3/2) <sup>+</sup>                                         |                  | A C  | $J^\pi$ : 335.6 $\gamma$ to (3/2) <sup>+</sup> . Proposed by <a href="#">1988Du07</a> in ( $\alpha, n\gamma$ ).                                                                                                                                                                                                                                        |
| 555.5 10                | (5/2, 7/2 <sup>+</sup> )                                   |                  | C    | $J^\pi$ : excit; $\gamma$ to (5/2) <sup>+</sup> is $\Delta J = 0$ , M1+E2.                                                                                                                                                                                                                                                                             |
| 686.92 5                | (5/2) <sup>+</sup>                                         |                  | ABC  | $J^\pi$ : excit; $\gamma$ to (5/2) <sup>+</sup> is $\Delta J = 1$ , M1+E2.                                                                                                                                                                                                                                                                             |
| 815.31 5                | (7/2) <sup>+</sup>                                         |                  | ABC  |                                                                                                                                                                                                                                                                                                                                                        |
| 816.10 9                | (7/2) <sup>+</sup>                                         |                  | A    |                                                                                                                                                                                                                                                                                                                                                        |
| 832.45 <sup>#</sup> 3   | (9/2) <sup>+</sup>                                         |                  | ABC  | $J^\pi$ : excit; $\gamma$ to 7/2 <sup>+</sup> is $\Delta J = 1$ , M1+E2.                                                                                                                                                                                                                                                                               |
| 1069.90 <sup>‡</sup> 11 | (11/2) <sup>+</sup>                                        |                  | ABC  | $J^\pi$ : stretched E2 $\gamma$ to (7/2) <sup>+</sup> , excit.                                                                                                                                                                                                                                                                                         |
| 1102.78 5               | (9/2) <sup>+</sup>                                         |                  | ABC  | $J^\pi$ : $\gamma$ to (7/2) <sup>+</sup> is $\Delta J = 1$ , M1; $\gamma$ to $J^\pi = (5/2)^+$ is $\Delta J = 2$ , E2.                                                                                                                                                                                                                                 |
| 1182.85 20              | (3/2, 5/2) <sup>+</sup>                                    |                  | A C  | $J^\pi$ : D+Q $\gamma$ 's to (3/2) <sup>+</sup> and (5/2) <sup>+</sup> . Discrepant with observed $\varepsilon + \beta^+$ feeding from 9/2 <sup>+</sup> .                                                                                                                                                                                              |
| 1420.4 10               |                                                            |                  | C    |                                                                                                                                                                                                                                                                                                                                                        |
| 1423.58 16              | (5/2 <sup>-</sup> , 7/2, 9/2 <sup>+</sup> )                |                  | A    | $J^\pi$ : log $ft > 6.9$ from (9/2) <sup>+</sup> , $\gamma$ to (5/2) <sup>+</sup> .                                                                                                                                                                                                                                                                    |
| 1468.45 6               | (11/2) <sup>+</sup>                                        |                  | ABC  | $J^\pi$ : excit; $\gamma$ to (9/2) <sup>+</sup> is $\Delta J = 1$ , M1+E2; $\gamma$ to (7/2) <sup>+</sup> is $\Delta J = 2$ , E2.                                                                                                                                                                                                                      |
| 1540.42 5               | (9/2) <sup>+</sup>                                         |                  | A C  | $J^\pi$ : $\gamma$ to (5/2) <sup>+</sup> is $\Delta J = 2$ , E2; $\gamma$ to (7/2) <sup>+</sup> is $\Delta J = 1$ , M1. Inconsistent with 1275.8 $\gamma$ to (3/2) <sup>+</sup> in $\beta^+$ decay.                                                                                                                                                    |
| 1650.0 <sup>#</sup> 4   | (13/2) <sup>+</sup>                                        |                  | ABC  | $J^\pi$ : $\gamma$ to (11/2) <sup>+</sup> is $\Delta J = 1$ , M1+E2; $\gamma$ to (9/2) <sup>+</sup> is $\Delta J = 2$ , E2.                                                                                                                                                                                                                            |
| 1696.56 8               | (9/2) <sup>+</sup>                                         |                  | A C  | $J^\pi$ : $\gamma$ to (7/2) <sup>+</sup> is $\Delta J = 1$ , D; $\gamma$ to (9/2) is $\Delta J = 0$ , D+Q Inconsistent with 1233.1 $\gamma$ , 1476.3 $\gamma$ to (3/2) <sup>+</sup> in $\beta^+$ decay.                                                                                                                                                |
| 1719.14 <sup>‡</sup> 12 | (15/2) <sup>+</sup>                                        |                  | ABC  | $J^\pi$ : stretched E2 $\gamma$ to (11/2) <sup>+</sup> ; no $\gamma$ to J<11/2 <sup>+</sup> .                                                                                                                                                                                                                                                          |
| 1849.71 15              | (7/2, 9/2 <sup>+</sup> )                                   |                  | A    | $J^\pi$ : log $f^{lu}t < 8.5$ from (9/2) <sup>+</sup> , $\gamma$ to (5/2) <sup>+</sup> .                                                                                                                                                                                                                                                               |
| 1854.03 20              | (9/2) <sup>+</sup>                                         |                  | ABC  | $J^\pi$ : $\gamma$ to (9/2 <sup>+</sup> ) is $\Delta J = 0$ , M1+E2.                                                                                                                                                                                                                                                                                   |
| 1911.65 19              | (7/2, 9/2, 11/2)                                           |                  | A    | $J^\pi$ : log $f^{lu}t < 8.5$ from (9/2) <sup>+</sup> .                                                                                                                                                                                                                                                                                                |
| 2007.15 18              | (7/2, 9/2)                                                 |                  | A C  | $J^\pi$ : log $f^{lu}t < 8.5$ from (9/2) <sup>+</sup> ; from $\gamma(\theta)$ .                                                                                                                                                                                                                                                                        |
| 2017.6 <sup>@</sup> 4   | (11/2) <sup>-</sup>                                        |                  | BC   | $J^\pi$ : $\gamma$ to (9/2 <sup>+</sup> ) is $\Delta J = 1$ , D; $\gamma$ to (11/2 <sup>+</sup> ) is $\Delta J = 0$ , D+Q.                                                                                                                                                                                                                             |
| 2062.5? 10              |                                                            |                  | C    |                                                                                                                                                                                                                                                                                                                                                        |
| 2137.68 9               | (7/2 <sup>+</sup> , 9/2 <sup>+</sup> , 11/2 <sup>+</sup> ) |                  | A    | $J^\pi$ : log $ft < 5.9$ from (9/2) <sup>+</sup> .                                                                                                                                                                                                                                                                                                     |
| 2145.42 20              | (11/2)                                                     |                  | A C  | $J^\pi$ : $\gamma$ to (11/2 <sup>+</sup> ) is $\Delta J = 0$ , D+Q.                                                                                                                                                                                                                                                                                    |
| 2171.93 14              | (7/2 <sup>+</sup> , 9/2 <sup>+</sup> , 11/2 <sup>+</sup> ) |                  | A    | $J^\pi$ : log $ft < 5.9$ from (9/2) <sup>+</sup> .                                                                                                                                                                                                                                                                                                     |
| 2193.3 5                | (15/2) <sup>+</sup>                                        |                  | B    |                                                                                                                                                                                                                                                                                                                                                        |
| 2206.2 6                | (15/2) <sup>+</sup>                                        |                  | BC   | $J^\pi$ : $\gamma$ to (15/2) <sup>+</sup> is E2; excit.                                                                                                                                                                                                                                                                                                |
| 2239.9 5                | (7/2, 9/2, 11/2 <sup>+</sup> )                             |                  | A    | $J^\pi$ : log $f^{lu}t < 8.5$ from (9/2) <sup>+</sup> , $\gamma$ to (7/2) <sup>+</sup> .                                                                                                                                                                                                                                                               |
| 2263.57 17              | (7/2, 9/2 <sup>+</sup> )                                   |                  | A    | $J^\pi$ : log $f^{lu}t < 8.5$ from (9/2) <sup>+</sup> , $\gamma$ to (5/2) <sup>+</sup> .                                                                                                                                                                                                                                                               |
| 2268.9 7                | (7/2) <sup>+</sup>                                         |                  | BC   | $J^\pi$ : $\gamma$ to (9/2 <sup>+</sup> ) is $\Delta J = 1$ , excit.                                                                                                                                                                                                                                                                                   |
| 2332.85 21              | (7/2, 9/2, 11/2 <sup>+</sup> )                             |                  | A    | $J^\pi$ : log $f^{lu}t < 8.5$ from (9/2) <sup>+</sup> , $\gamma$ to (7/2) <sup>+</sup> .                                                                                                                                                                                                                                                               |

Continued on next page (footnotes at end of table)

**Adopted Levels, Gammas (continued)**

| $^{99}\text{Pd}$ Levels (continued) |                                                            |           |      |                                                                                                                                                   |
|-------------------------------------|------------------------------------------------------------|-----------|------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| E(level) <sup>†</sup>               | $J^{\pi a}$                                                | $T_{1/2}$ | XREF | Comments                                                                                                                                          |
| 2421.9 <sup>#</sup> 4               | (17/2 <sup>+</sup> )                                       |           | B    |                                                                                                                                                   |
| 2426.5 8                            | (13/2 <sup>+</sup> )                                       |           | C    | $J^{\pi}$ : D to (11/2) <sup>+</sup> , (15/2) <sup>+</sup> .                                                                                      |
| 2486.41 23                          | (7/2 <sup>+</sup> , 9/2 <sup>+</sup> , 11/2 <sup>+</sup> ) |           | A    | $J^{\pi}$ : log $ft < 5.9$ from (9/2) <sup>+</sup> .                                                                                              |
| 2509.1 6                            | (17/2 <sup>+</sup> )                                       |           | B    | $J^{\pi}$ : $\gamma$ to (13/2 <sup>+</sup> ) is $\Delta J=2$ , E2; no $\gamma$ to J<13/2.                                                         |
| 2600.7 <sup>&amp;</sup> 3           | (19/2 <sup>+</sup> )                                       |           | BC   | $J^{\pi}$ : $\gamma$ to (15/2) <sup>+</sup> is $\Delta J=2$ , E2; no $\gamma$ to J<15/2.                                                          |
| 2601.81 15                          | (7/2 <sup>+</sup> , 9/2 <sup>+</sup> , 11/2 <sup>+</sup> ) |           | A    | $J^{\pi}$ : log $ft < 5.9$ from (9/2) <sup>+</sup> .                                                                                              |
| 2635.5 4                            | (21/2 <sup>+</sup> )                                       |           | B    |                                                                                                                                                   |
| 2706.6 <sup>@</sup> 4               | (15/2 <sup>-</sup> )                                       |           | B    |                                                                                                                                                   |
| 3209.5 4                            | (7/2 <sup>+</sup> , 9/2 <sup>+</sup> , 11/2 <sup>+</sup> ) |           | A    | $J^{\pi}$ : log $ft < 5.9$ from (9/2) <sup>+</sup> .                                                                                              |
| 3325.8 8                            | (21/2 <sup>+</sup> )                                       |           | B    |                                                                                                                                                   |
| 3327.7 6                            | (21/2 <sup>+</sup> )                                       |           | B    |                                                                                                                                                   |
| 3340.3 <sup>&amp;</sup> 4           | (23/2 <sup>+</sup> )                                       |           | B    |                                                                                                                                                   |
| 3395.9 <sup>@</sup> 4               | (19/2 <sup>-</sup> )                                       |           | B    |                                                                                                                                                   |
| 3446.2 4                            | (7/2 <sup>+</sup> , 9/2 <sup>+</sup> , 11/2 <sup>+</sup> ) |           | A    | $J^{\pi}$ : log $ft < 5.9$ from (9/2) <sup>+</sup> .                                                                                              |
| 3516.7 11                           | (17/2 <sup>+</sup> )                                       |           | B    |                                                                                                                                                   |
| 3546.7 5                            | (25/2 <sup>+</sup> )                                       |           | B    |                                                                                                                                                   |
| 3594.4 10                           | (7/2 <sup>+</sup> , 9/2 <sup>+</sup> , 11/2 <sup>+</sup> ) |           | A    | $J^{\pi}$ : log $ft < 5.9$ from (9/2) <sup>+</sup> .                                                                                              |
| 3936.2 6                            | (25/2 <sup>+</sup> )                                       |           | B    |                                                                                                                                                   |
| 4014.7 <sup>@</sup> 4               | (23/2 <sup>-</sup> )                                       |           | B    |                                                                                                                                                   |
| 4039.8 <sup>&amp;</sup> 5           | (27/2 <sup>+</sup> )                                       | <4 ns     | B    | $T_{1/2}$ : From (HI,xn $\gamma$ ).<br>$J^{\pi}$ : $\gamma$ to (25/2) <sup>+</sup> is M1+E2.                                                      |
| 4760.1 6                            | (29/2 <sup>+</sup> )                                       |           | B    |                                                                                                                                                   |
| 4773.3 <sup>@</sup> 5               | (27/2 <sup>-</sup> )                                       |           | B    |                                                                                                                                                   |
| 5015.6 6                            | (29/2 <sup>+</sup> )                                       |           | B    |                                                                                                                                                   |
| 5331.6 <sup>&amp;</sup> 6           | (31/2 <sup>+</sup> )                                       |           | B    | Possible configuration= $\pi g_{9/2}^{-2} \otimes v g_{7/2} \otimes v d_{5/2}^2$ or $\pi g_{9/2}^{-4} \otimes v g_{7/2}$ ; maximum aligned state. |
| 5510.6 8                            | (33/2 <sup>+</sup> )                                       |           | B    |                                                                                                                                                   |
| 5781.1 <sup>@</sup> 5               | (31/2 <sup>-</sup> )                                       |           | B    |                                                                                                                                                   |
| 6541.4 <sup>&amp;</sup> 7           | (35/2 <sup>+</sup> )                                       |           | B    |                                                                                                                                                   |
| 6598.6 9                            |                                                            |           | B    |                                                                                                                                                   |
| 6803.8 <sup>@</sup> 6               | (35/2 <sup>-</sup> )                                       |           | B    |                                                                                                                                                   |
| 7074.9 8                            | (37/2 <sup>+</sup> )                                       |           | B    |                                                                                                                                                   |
| 7124.9 9                            |                                                            |           | B    |                                                                                                                                                   |
| 7300.3 8                            | (37/2 <sup>+</sup> )                                       |           | B    |                                                                                                                                                   |
| 7915.3 12                           |                                                            |           | B    |                                                                                                                                                   |
| 8010.9 <sup>&amp;</sup> 8           | (39/2 <sup>+</sup> )                                       |           | B    |                                                                                                                                                   |
| 8183.3 <sup>@</sup> 8               | (39/2 <sup>-</sup> )                                       |           | B    | Possible configuration= $\pi g_{9/2}^{-2} \otimes v g_{7/2}^2 \otimes v h_{11/2}$ , maximum aligned state.                                        |
| 8454.9 12                           |                                                            |           | B    |                                                                                                                                                   |
| 9412.8 10                           | (43/2 <sup>-</sup> )                                       |           | B    |                                                                                                                                                   |
| 9513.5 <sup>@</sup> 10              | (43/2)                                                     |           | B    |                                                                                                                                                   |
| 9844.3 11                           | (45/2)                                                     |           | B    |                                                                                                                                                   |
| 9981.3 11                           |                                                            |           | B    |                                                                                                                                                   |
| 11457.5 <sup>@</sup> 11             | (47/2)                                                     |           | B    |                                                                                                                                                   |

<sup>†</sup> From least-squares fit to E $\gamma$  data.<sup>‡</sup> Band(A):  $K^{\pi}=3/2^{+}$ . configuration= $v g_{7/2}^3 \otimes \pi g_{9/2}^6$ .<sup>#</sup> Band(B):  $K^{\pi}=1/2^{+}$ . configuration= $v g_{7/2}^2 \otimes v d_{5/2} \otimes \pi g_{9/2}^6$ .<sup>@</sup> Band(C): Band based on 11/2<sup>-</sup>. configuration= $K^{\pi}=1/2^{-}, 3/2^{-}$ ;  $\pi g_{9/2}^6 \otimes v g_{9/2}^{10} \otimes v g_{7/2}^2 \otimes v h_{11/2}$  or  $\pi g_{9/2}^6 \otimes v g_{9/2}^8 \otimes v g_{7/2}^2 \otimes v d_{5/2}^2 \otimes v h_{11/2}$ .

Continued on next page (footnotes at end of table)

---

**Adopted Levels, Gammas (continued)**

---

$^{99}\text{Pd}$  Levels (continued)

& Band(D): Band based on  $19/2^+$ . Configurations=  $K^\pi=5/2^+$ ,  $\pi g_{9/2}^6 \otimes \nu g_{7/2}^2 \otimes \nu h_{11/2}^2 \otimes \nu g_{9/2}^{-1}$  or  $\pi g_{9/2}^5 \otimes \pi g_{7/2} \otimes \nu g_{7/2}^2 \otimes \nu h_{11/2}^2 \otimes \nu g_{9/2}^{-1}$ ,  $K^\pi=19/2^+$ ; the latter is favored.

<sup>a</sup> Unless given otherwise,  $J^\pi$  are from (HI,xn $\gamma$ ) (2011Si04) based on band assignments and/or DCO ratios.

Adopted Levels, Gammas (continued)

| $\gamma(^{99}\text{Pd})$ |                         |                       |                       |         |                     |                    |                |                       |                                                                                                                                                                                                              |
|--------------------------|-------------------------|-----------------------|-----------------------|---------|---------------------|--------------------|----------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $E_i(\text{level})$      | $J_i^\pi$               | $E_\gamma^{\ddagger}$ | $I_\gamma^{\ddagger}$ | $E_f$   | $J_f^\pi$           | Mult. <sup>†</sup> | $\delta^{\#a}$ | $\alpha^{\&}$         | Comments                                                                                                                                                                                                     |
| 219.89                   | (3/2) <sup>+</sup>      | 219.9 4               | 100                   | 0.0     | (5/2) <sup>+</sup>  | [M1,E2]            |                | 0.065 21              | $\alpha(\text{K})=0.055$ 17; $\alpha(\text{L})=0.0078$ 32;<br>$\alpha(\text{M})=0.00148$ 61<br>$\alpha(\text{N})=2.43\times 10^{-4}$ 96                                                                      |
| 264.382                  | (7/2) <sup>+</sup>      | 264.46 3              | 100                   | 0.0     | (5/2) <sup>+</sup>  | M1                 |                | 0.0273                | $\alpha(\text{K})=0.0239$ 4; $\alpha(\text{L})=0.00286$ 4;<br>$\alpha(\text{M})=0.000538$ 8<br>$\alpha(\text{N})=9.06\times 10^{-5}$ 13                                                                      |
| 463.78                   | (3/2 <sup>+</sup> )     | 243.7 2               | 35 6                  | 219.89  | (3/2) <sup>+</sup>  |                    |                |                       |                                                                                                                                                                                                              |
|                          |                         | 463.73 7              | 100 12                | 0.0     | (5/2) <sup>+</sup>  |                    |                |                       |                                                                                                                                                                                                              |
| 555.5                    | (5/2,7/2 <sup>+</sup> ) | 335.6                 | 100                   | 219.89  | (3/2) <sup>+</sup>  |                    |                |                       |                                                                                                                                                                                                              |
| 686.92                   | (5/2 <sup>+</sup> )     | 422.9 7               | 5.4 8                 | 264.382 | (7/2) <sup>+</sup>  |                    |                |                       |                                                                                                                                                                                                              |
|                          |                         | 467.1 1               | 15.5 16               | 219.89  | (3/2) <sup>+</sup>  |                    |                |                       |                                                                                                                                                                                                              |
|                          |                         | 686.99 5              | 100 8                 | 0.0     | (5/2) <sup>+</sup>  | M1+E2              | -1.2 4         | 0.00255 5             | $\alpha(\text{K})=0.00223$ 5; $\alpha(\text{L})=0.000266$ 4;<br>$\alpha(\text{M})=5.00\times 10^{-5}$ 7<br>$\alpha(\text{N})=8.39\times 10^{-6}$ 13                                                          |
| 815.31                   | (7/2) <sup>+</sup>      | 551.1 1               | 5.7 10                | 264.382 | (7/2) <sup>+</sup>  |                    |                |                       |                                                                                                                                                                                                              |
|                          |                         | 595.6 7               |                       | 219.89  | (3/2) <sup>+</sup>  |                    |                |                       |                                                                                                                                                                                                              |
|                          |                         | 815.63 10             | 100 6                 | 0.0     | (5/2) <sup>+</sup>  | M1+E2              | -1.4 4         | 0.00167 4             | $\alpha(\text{K})=0.00146$ 4; $\alpha(\text{L})=0.000173$ 3;<br>$\alpha(\text{M})=3.25\times 10^{-5}$ 6<br>$\alpha(\text{N})=5.46\times 10^{-6}$ 10                                                          |
| 816.10                   | (7/2 <sup>+</sup> )     | 352.4 1               | 43 9                  | 463.78  | (3/2 <sup>+</sup> ) |                    |                |                       |                                                                                                                                                                                                              |
|                          |                         | 596.2 1               | 1.0×10 <sup>2</sup> 4 | 219.89  | (3/2) <sup>+</sup>  |                    |                |                       |                                                                                                                                                                                                              |
|                          |                         | 816.1 10              | <87                   | 0.0     | (5/2) <sup>+</sup>  |                    |                |                       |                                                                                                                                                                                                              |
| 832.45                   | (9/2) <sup>+</sup>      | 568.20 4              | 28.5 10               | 264.382 | (7/2) <sup>+</sup>  | M1+E2              | +1.1 5         | 0.00413               | $\alpha(\text{K})=0.00360$ 5; $\alpha(\text{L})=0.000437$ 11;<br>$\alpha(\text{M})=8.21\times 10^{-5}$ 20<br>$\alpha(\text{N})=1.38\times 10^{-5}$ 3                                                         |
| 1069.90                  | (11/2) <sup>+</sup>     | 832.29 4              | 100 4                 | 0.0     | (5/2) <sup>+</sup>  |                    |                |                       |                                                                                                                                                                                                              |
|                          |                         | 238.3 7               | 0.45 8                | 832.45  | (9/2) <sup>+</sup>  |                    |                |                       |                                                                                                                                                                                                              |
|                          |                         | 805.7 3               | 100 7                 | 264.382 | (7/2) <sup>+</sup>  | E2                 |                | 1.67×10 <sup>-3</sup> | $\alpha(\text{K})=0.001457$ 21; $\alpha(\text{L})=0.0001749$ 25;<br>$\alpha(\text{M})=3.28\times 10^{-5}$ 5<br>$\alpha(\text{N})=5.50\times 10^{-6}$ 8                                                       |
| 1102.78                  | (9/2) <sup>+</sup>      | 287.65 7              | 16 4                  | 815.31  | (7/2) <sup>+</sup>  | (M1)               |                | 0.0220                | $\alpha(\text{K})=0.0192$ 3; $\alpha(\text{L})=0.00230$ 4;<br>$\alpha(\text{M})=0.000432$ 6<br>$\alpha(\text{N})=7.28\times 10^{-5}$ 11                                                                      |
|                          |                         | 838.47 8              | 64 4                  | 264.382 | (7/2) <sup>+</sup>  | (M1+E2)            | +1.9 +39-10    | 0.00155 6             | $\alpha(\text{K})=0.00135$ 5; $\alpha(\text{L})=0.000161$ 5;<br>$\alpha(\text{M})=3.01\times 10^{-5}$ 9<br>$\alpha(\text{N})=5.06\times 10^{-6}$ 15                                                          |
|                          |                         | 1102.60 7             | 100 4                 | 0.0     | (5/2) <sup>+</sup>  | E2                 |                | 8.11×10 <sup>-4</sup> | $\alpha(\text{K})=0.000709$ 10; $\alpha(\text{L})=8.31\times 10^{-5}$ 12;<br>$\alpha(\text{M})=1.556\times 10^{-5}$ 22<br>$\alpha(\text{N})=2.62\times 10^{-6}$ 4; $\alpha(\text{IPF})=5.91\times 10^{-7}$ 9 |
| 1182.85                  | (3/2,5/2) <sup>+</sup>  | 963.2 3               | 100 13                | 219.89  | (3/2) <sup>+</sup>  | (M1+E2)            | +0.13 7        | 1.22×10 <sup>-3</sup> | $\alpha(\text{K})=0.001072$ 16; $\alpha(\text{L})=0.0001238$ 18;<br>$\alpha(\text{M})=2.32\times 10^{-5}$ 4<br>$\alpha(\text{N})=3.92\times 10^{-6}$ 6                                                       |

Adopted Levels, Gammas (continued)

$\gamma(^{99}\text{Pd})$  (continued)

| $E_i(\text{level})$ | $J_i^\pi$                                 | $E_\gamma$  | $I_\gamma$ | $E_f$   | $J_f^\pi$           | Mult.†  | $\delta^{\#a}$ | $\alpha^{\&}$         | Comments                                                                                                                                                                                                     |
|---------------------|-------------------------------------------|-------------|------------|---------|---------------------|---------|----------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1182.85             | (3/2,5/2) <sup>+</sup>                    | 1182.2 4    | 50 19      | 0.0     | (5/2) <sup>+</sup>  | (M1+E2) |                | 0.00075 5             | $\alpha(\text{K})=0.00065$ 4; $\alpha(\text{L})=7.5\times 10^{-5}$ 4;<br>$\alpha(\text{M})=1.41\times 10^{-5}$ 8<br>$\alpha(\text{N})=2.37\times 10^{-6}$ 13; $\alpha(\text{IPF})=4.8\times 10^{-6}$ 5       |
| 1420.4              |                                           | 1156.0      | 100        | 264.382 | (7/2) <sup>+</sup>  |         |                |                       |                                                                                                                                                                                                              |
| 1423.58             | (5/2 <sup>-</sup> ,7/2,9/2 <sup>+</sup> ) | 1158.9 2    | 100 25     | 264.382 | (7/2) <sup>+</sup>  |         |                |                       |                                                                                                                                                                                                              |
|                     |                                           | 1423.9 4    | 50 25      | 0.0     | (5/2) <sup>+</sup>  |         |                |                       |                                                                                                                                                                                                              |
| 1468.45             | (11/2) <sup>+</sup>                       | 398.6 1     | 42 4       | 1069.90 | (11/2) <sup>+</sup> | [M1,E2] |                | 0.0108 11             | $\alpha(\text{K})=0.0093$ 9; $\alpha(\text{L})=0.00117$ 18;<br>$\alpha(\text{M})=0.00022$ 4<br>$\alpha(\text{N})=3.7\times 10^{-5}$ 6                                                                        |
|                     |                                           | 636.0 1     | 71 7       | 832.45  | (9/2) <sup>+</sup>  | (M1+E2) | -0.7 +6-8      | 0.00312 6             | $\alpha(\text{K})=0.00273$ 6; $\alpha(\text{L})=0.000324$ 5;<br>$\alpha(\text{M})=6.07\times 10^{-5}$ 10<br>$\alpha(\text{N})=1.021\times 10^{-5}$ 15                                                        |
|                     |                                           | 653.2 1     | 42 23      | 815.31  | (7/2) <sup>+</sup>  |         |                |                       |                                                                                                                                                                                                              |
|                     |                                           | 1203.98 8   | 100 7      | 264.382 | (7/2) <sup>+</sup>  | E2      |                | 6.79×10 <sup>-4</sup> | $\alpha(\text{K})=0.000588$ 9; $\alpha(\text{L})=6.85\times 10^{-5}$ 10;<br>$\alpha(\text{M})=1.282\times 10^{-5}$ 18<br>$\alpha(\text{N})=2.16\times 10^{-6}$ 3; $\alpha(\text{IPF})=7.84\times 10^{-6}$ 11 |
| 1540.42             | (9/2) <sup>+</sup>                        | 438.3 2     | 13 3       | 1102.78 | (9/2) <sup>+</sup>  |         |                |                       |                                                                                                                                                                                                              |
|                     |                                           | 708.0 1     | 25 5       | 832.45  | (9/2) <sup>+</sup>  |         |                |                       |                                                                                                                                                                                                              |
|                     |                                           | 725.4 2     | 32 3       | 815.31  | (7/2) <sup>+</sup>  | (M1)    |                | 0.00232               | $\alpha(\text{K})=0.00203$ 3; $\alpha(\text{L})=0.000237$ 4;<br>$\alpha(\text{M})=4.43\times 10^{-5}$ 7<br>$\alpha(\text{N})=7.49\times 10^{-6}$ 11                                                          |
|                     |                                           | 853.73 9    | 21.1 19    | 686.92  | (5/2 <sup>+</sup> ) | E2      |                | 1.45×10 <sup>-3</sup> | $\alpha(\text{K})=0.001268$ 18; $\alpha(\text{L})=0.0001514$ 22;<br>$\alpha(\text{M})=2.84\times 10^{-5}$ 4<br>$\alpha(\text{N})=4.76\times 10^{-6}$ 7                                                       |
|                     |                                           | 1076.3 @b 1 | 21 3       | 463.78  | (3/2 <sup>+</sup> ) |         |                |                       |                                                                                                                                                                                                              |
|                     |                                           | 1275.8 1    | 100 24     | 264.382 | (7/2) <sup>+</sup>  |         |                |                       |                                                                                                                                                                                                              |
|                     |                                           | 1540.4 1    | 58 8       | 0.0     | (5/2) <sup>+</sup>  |         |                |                       |                                                                                                                                                                                                              |
| 1650.0              | (13/2) <sup>+</sup>                       | 579.6 5     | 14.9 14    | 1069.90 | (11/2) <sup>+</sup> | (M1+E2) | -0.8 +10-3     | 0.00392               | $\alpha(\text{K})=0.00342$ 5; $\alpha(\text{L})=0.000411$ 11;<br>$\alpha(\text{M})=7.71\times 10^{-5}$ 20<br>$\alpha(\text{N})=1.29\times 10^{-5}$ 3                                                         |
|                     |                                           | 817.6 10    | 100 7      | 832.45  | (9/2) <sup>+</sup>  | E2      |                | 1.61×10 <sup>-3</sup> | $\alpha(\text{K})=0.001406$ 21; $\alpha(\text{L})=0.0001686$ 25;<br>$\alpha(\text{M})=3.16\times 10^{-5}$ 5<br>$\alpha(\text{N})=5.30\times 10^{-6}$ 8                                                       |
| 1696.56             | (9/2 <sup>+</sup> )                       | 864.0 1     | 100 10     | 832.45  | (9/2) <sup>+</sup>  |         |                |                       |                                                                                                                                                                                                              |
|                     |                                           | 881.1 3     | 5.5 13     | 815.31  | (7/2) <sup>+</sup>  |         |                |                       |                                                                                                                                                                                                              |
|                     |                                           | 1010.1 2    | 12.9 17    | 686.92  | (5/2 <sup>+</sup> ) |         |                |                       |                                                                                                                                                                                                              |
|                     |                                           | 1233.1 @ 2  | 81 17      | 463.78  | (3/2 <sup>+</sup> ) | (M1+E2) |                | 0.00069 4             | $\alpha(\text{K})=0.00059$ 4; $\alpha(\text{L})=6.9\times 10^{-5}$ 4;<br>$\alpha(\text{M})=1.28\times 10^{-5}$ 7<br>$\alpha(\text{N})=2.17\times 10^{-6}$ 12; $\alpha(\text{IPF})=1.12\times 10^{-5}$ 10     |
|                     |                                           | 1432.3 2    | 39 4       | 264.382 | (7/2) <sup>+</sup>  |         |                |                       |                                                                                                                                                                                                              |
|                     |                                           | 1476.3 @ 3  | 16 5       | 219.89  | (3/2) <sup>+</sup>  |         |                |                       |                                                                                                                                                                                                              |

Adopted Levels, Gammas (continued)

| $\gamma(^{99}\text{Pd})$ (continued) |                                                          |                       |                       |         |                                           |                  |                |                       |                                                                                                                                                     |
|--------------------------------------|----------------------------------------------------------|-----------------------|-----------------------|---------|-------------------------------------------|------------------|----------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| $E_i(\text{level})$                  | $J_i^\pi$                                                | $E_\gamma^{\ddagger}$ | $I_\gamma^{\ddagger}$ | $E_f$   | $J_f^\pi$                                 | Mult. $^\dagger$ | $\delta^{\#a}$ | $\alpha^{\&}$         | Comments                                                                                                                                            |
| 1696.56                              | (9/2 <sup>+</sup> )                                      | 1695.9 3              | 9.7 25                | 0.0     | (5/2) <sup>+</sup>                        |                  |                |                       |                                                                                                                                                     |
| 1719.14                              | (15/2) <sup>+</sup>                                      | 649.25 6              | 100                   | 1069.90 | (11/2) <sup>+</sup>                       | E2               |                | 0.00289               | $\alpha(\text{K})=0.00252$ 4; $\alpha(\text{L})=0.000309$ 5;<br>$\alpha(\text{M})=5.80\times 10^{-5}$ 9<br>$\alpha(\text{N})=9.70\times 10^{-6}$ 14 |
| 1849.71                              | (7/2,9/2 <sup>+</sup> )                                  | 1585.3 2              | 1.0 $\times 10^2$ 4   | 264.382 | (7/2) <sup>+</sup>                        |                  |                |                       |                                                                                                                                                     |
|                                      |                                                          | 1849.7 2              | 35 9                  | 0.0     | (5/2) <sup>+</sup>                        |                  |                |                       |                                                                                                                                                     |
| 1854.03                              | (9/2 <sup>+</sup> )                                      | 385.6 2               |                       | 1468.45 | (11/2) <sup>+</sup>                       |                  |                |                       |                                                                                                                                                     |
|                                      |                                                          | 751.0 7               |                       | 1102.78 | (9/2) <sup>+</sup>                        | M1+E2            | +0.8 2         | 0.00208 4             | $\alpha(\text{K})=0.00182$ 4; $\alpha(\text{L})=0.000215$ 4;<br>$\alpha(\text{M})=4.03\times 10^{-5}$ 6<br>$\alpha(\text{N})=6.78\times 10^{-6}$ 11 |
| 1911.65                              | (7/2,9/2,11/2)                                           | 371.3 3               | 75 25                 | 1540.42 | (9/2) <sup>+</sup>                        |                  |                |                       |                                                                                                                                                     |
|                                      |                                                          | 443.1 3               | 100 25                | 1468.45 | (11/2) <sup>+</sup>                       |                  |                |                       |                                                                                                                                                     |
|                                      |                                                          | 488.1 3               | 100 25                | 1423.58 | (5/2 <sup>-</sup> ,7/2,9/2 <sup>+</sup> ) |                  |                |                       |                                                                                                                                                     |
| 2007.15                              | (7/2,9/2)                                                | 1175.0 2              | 100                   | 832.45  | (9/2) <sup>+</sup>                        |                  |                |                       |                                                                                                                                                     |
| 2017.6                               | (11/2 <sup>-</sup> )                                     | 947.5 7               | 30.6 21               | 1069.90 | (11/2) <sup>+</sup>                       |                  |                |                       |                                                                                                                                                     |
|                                      |                                                          | 1185.4 5              | 100 9                 | 832.45  | (9/2) <sup>+</sup>                        |                  |                |                       |                                                                                                                                                     |
| 2062.5?                              |                                                          | 1230.0                | 100                   | 832.45  | (9/2) <sup>+</sup>                        |                  |                |                       |                                                                                                                                                     |
| 2137.68                              | (7/2 <sup>+</sup> ,9/2 <sup>+</sup> ,11/2 <sup>+</sup> ) | 954.7 3               | 3.8 14                | 1182.85 | (3/2,5/2) <sup>+</sup>                    |                  |                |                       |                                                                                                                                                     |
|                                      |                                                          | 1034.8 2              | 16 3                  | 1102.78 | (9/2) <sup>+</sup>                        |                  |                |                       |                                                                                                                                                     |
|                                      |                                                          | 1304.9 2              | 27 11                 | 832.45  | (9/2) <sup>+</sup>                        |                  |                |                       |                                                                                                                                                     |
|                                      |                                                          | 1873.4 1              | 100 6                 | 264.382 | (7/2) <sup>+</sup>                        |                  |                |                       |                                                                                                                                                     |
| 2145.42                              | (11/2)                                                   | 1076.0                |                       | 1069.90 | (11/2) <sup>+</sup>                       | D+Q              | +0.5 10        |                       |                                                                                                                                                     |
|                                      |                                                          | 1881.0 2              |                       | 264.382 | (7/2) <sup>+</sup>                        |                  |                |                       |                                                                                                                                                     |
| 2171.93                              | (7/2 <sup>+</sup> ,9/2 <sup>+</sup> ,11/2 <sup>+</sup> ) | 1339.3 2              | 71 8                  | 832.45  | (9/2) <sup>+</sup>                        |                  |                |                       |                                                                                                                                                     |
|                                      |                                                          | 1356.1 2              | 53 6                  | 816.10  | (7/2) <sup>+</sup>                        |                  |                |                       |                                                                                                                                                     |
|                                      |                                                          | 1907.1 4              | 100 6                 | 264.382 | (7/2) <sup>+</sup>                        |                  |                |                       |                                                                                                                                                     |
| 2193.3                               | (15/2 <sup>+</sup> )                                     | 475.0 7               | 100 25                | 1719.14 | (15/2) <sup>+</sup>                       |                  |                |                       |                                                                                                                                                     |
|                                      |                                                          | 544 <sup>b</sup> 1    |                       | 1650.0  | (13/2) <sup>+</sup>                       |                  |                |                       |                                                                                                                                                     |
|                                      |                                                          | 725.3 7               |                       | 1468.45 | (11/2) <sup>+</sup>                       |                  |                |                       |                                                                                                                                                     |
|                                      |                                                          | 1122.0 7              |                       | 1069.90 | (11/2) <sup>+</sup>                       |                  |                |                       |                                                                                                                                                     |
| 2206.2                               | (15/2 <sup>+</sup> )                                     | 486.9 7               | 100                   | 1719.14 | (15/2) <sup>+</sup>                       | E2               |                | 0.00646               | $\alpha(\text{K})=0.00559$ 9; $\alpha(\text{L})=0.000713$ 11;<br>$\alpha(\text{M})=0.0001342$ 20<br>$\alpha(\text{N})=2.23\times 10^{-5}$ 4         |
| 2239.9                               | (7/2,9/2,11/2 <sup>+</sup> )                             | 1975.5 5              | 100                   | 264.382 | (7/2) <sup>+</sup>                        |                  |                |                       |                                                                                                                                                     |
| 2263.57                              | (7/2,9/2 <sup>+</sup> )                                  | 1448.3 2              | 100 16                | 815.31  | (7/2) <sup>+</sup>                        |                  |                |                       |                                                                                                                                                     |
|                                      |                                                          | 1576.4 3              | 77 12                 | 686.92  | (5/2) <sup>+</sup>                        |                  |                |                       |                                                                                                                                                     |
|                                      |                                                          | 2264.0 6              | 8 6                   | 0.0     | (5/2) <sup>+</sup>                        |                  |                |                       |                                                                                                                                                     |
| 2268.9                               | (7/2 <sup>+</sup> )                                      | 728.5                 | 45 4                  | 1540.42 | (9/2) <sup>+</sup>                        | (M1)             |                | 0.00230               | $\alpha(\text{K})=0.00201$ 3; $\alpha(\text{L})=0.000234$ 4;<br>$\alpha(\text{M})=4.39\times 10^{-5}$ 7<br>$\alpha(\text{N})=7.41\times 10^{-6}$ 11 |
|                                      |                                                          | 1436.5                | 100 8                 | 832.45  | (9/2) <sup>+</sup>                        | (M1)             |                | 5.72 $\times 10^{-4}$ | $\alpha(\text{K})=0.000455$ 7; $\alpha(\text{L})=5.21\times 10^{-5}$ 8;<br>$\alpha(\text{M})=9.75\times 10^{-6}$ 14                                 |

**Adopted Levels, Gammas (continued)**

$\gamma(^{99}\text{Pd})$  (continued)

| $E_i(\text{level})$ | $J_i^\pi$                                                | $E_\gamma^{\ddagger}$ | $I_\gamma^{\ddagger}$ | $E_f$   | $J_f^\pi$                                 | Mult. $^\dagger$ | $\delta^{#a}$ | $\alpha^\&$           | Comments                                                                                                                                                                                                   |
|---------------------|----------------------------------------------------------|-----------------------|-----------------------|---------|-------------------------------------------|------------------|---------------|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                                                          |                       |                       |         |                                           |                  |               |                       | $\alpha(\text{N})=1.647\times 10^{-6}$ 23;<br>$\alpha(\text{IPF})=5.28\times 10^{-5}$ 8                                                                                                                    |
| 2332.85             | (7/2,9/2,11/2 <sup>+</sup> )                             | 326.0 2               | 81 14                 | 2007.15 | (7/2,9/2)                                 |                  |               |                       |                                                                                                                                                                                                            |
|                     |                                                          | 908.4 4               | 68 14                 | 1423.58 | (5/2 <sup>-</sup> ,7/2,9/2 <sup>+</sup> ) |                  |               |                       |                                                                                                                                                                                                            |
|                     |                                                          | 2068.1 4              | 100 11                | 264.382 | (7/2) <sup>+</sup>                        |                  |               |                       |                                                                                                                                                                                                            |
| 2421.9              | (17/2 <sup>+</sup> )                                     | 215.6 7               | 13.2 12               | 2206.2  | (15/2 <sup>+</sup> )                      |                  |               |                       |                                                                                                                                                                                                            |
|                     |                                                          | 702.8 7               | 10.8 12               | 1719.14 | (15/2) <sup>+</sup>                       |                  |               |                       |                                                                                                                                                                                                            |
|                     |                                                          | 771.9 3               | 100 9                 | 1650.0  | (13/2) <sup>+</sup>                       |                  |               |                       |                                                                                                                                                                                                            |
| 2426.5              | (13/2 <sup>+</sup> )                                     | 707.4                 | 100 9                 | 1719.14 | (15/2) <sup>+</sup>                       | (M1+E2)          | -0.7 +13-3    | 0.00241 5             | $\alpha(\text{K})=0.00211$ 4; $\alpha(\text{L})=0.000249$ 4;<br>$\alpha(\text{M})=4.67\times 10^{-5}$ 7<br>$\alpha(\text{N})=7.86\times 10^{-6}$ 12                                                        |
|                     |                                                          | 1356.5                | 82 13                 | 1069.90 | (11/2) <sup>+</sup>                       | (M1)             |               | 6.17×10 <sup>-4</sup> | $\alpha(\text{K})=0.000513$ 8; $\alpha(\text{L})=5.88\times 10^{-5}$ 9; $\alpha(\text{M})=1.100\times 10^{-5}$ 16<br>$\alpha(\text{N})=1.86\times 10^{-6}$ 3;<br>$\alpha(\text{IPF})=3.25\times 10^{-5}$ 5 |
| 2486.41             | (7/2 <sup>+</sup> ,9/2 <sup>+</sup> ,11/2 <sup>+</sup> ) | 1416.5 2              | 100                   | 1069.90 | (11/2) <sup>+</sup>                       |                  |               |                       |                                                                                                                                                                                                            |
| 2509.1              | (17/2 <sup>+</sup> )                                     | 859.1 5               | 100                   | 1650.0  | (13/2) <sup>+</sup>                       |                  |               |                       |                                                                                                                                                                                                            |
| 2600.7              | (19/2 <sup>+</sup> )                                     | 178.1 7               | 2.2 4                 | 2421.9  | (17/2 <sup>+</sup> )                      |                  |               |                       |                                                                                                                                                                                                            |
|                     |                                                          | 881.7 3               | 100 6                 | 1719.14 | (15/2) <sup>+</sup>                       | E2               |               | 1.35×10 <sup>-3</sup> | $\alpha(\text{K})=0.001175$ 17;<br>$\alpha(\text{L})=0.0001399$ 20;<br>$\alpha(\text{M})=2.62\times 10^{-5}$ 4<br>$\alpha(\text{N})=4.40\times 10^{-6}$ 7                                                  |
| 2601.81             | (7/2 <sup>+</sup> ,9/2 <sup>+</sup> ,11/2 <sup>+</sup> ) | 1531.9 1              | 100                   | 1069.90 | (11/2) <sup>+</sup>                       |                  |               |                       |                                                                                                                                                                                                            |
| 2635.5              | (21/2 <sup>+</sup> )                                     | (35)                  |                       | 2600.7  | (19/2 <sup>+</sup> )                      |                  |               |                       |                                                                                                                                                                                                            |
|                     |                                                          | 213.2 7               | 100 10                | 2421.9  | (17/2 <sup>+</sup> )                      |                  |               |                       |                                                                                                                                                                                                            |
| 2706.6              | (15/2 <sup>-</sup> )                                     | 689.3 5               | 87 8                  | 2017.6  | (11/2 <sup>-</sup> )                      |                  |               |                       |                                                                                                                                                                                                            |
|                     |                                                          | 1056.3 5              | 100 11                | 1650.0  | (13/2) <sup>+</sup>                       | E1               |               | 3.87×10 <sup>-4</sup> | $\alpha(\text{K})=0.000340$ 5; $\alpha(\text{L})=3.87\times 10^{-5}$ 6; $\alpha(\text{M})=7.22\times 10^{-6}$ 11<br>$\alpha(\text{N})=1.218\times 10^{-6}$ 17                                              |
| 3209.5              | (7/2 <sup>+</sup> ,9/2 <sup>+</sup> ,11/2 <sup>+</sup> ) | 2945.1 4              | 100                   | 264.382 | (7/2) <sup>+</sup>                        |                  |               |                       |                                                                                                                                                                                                            |
| 3325.8              | (21/2 <sup>+</sup> )                                     | 816.7 5               | 100                   | 2509.1  | (17/2 <sup>+</sup> )                      |                  |               |                       |                                                                                                                                                                                                            |
| 3327.7              | (21/2 <sup>+</sup> )                                     | 727.0 7               | 100                   | 2600.7  | (19/2 <sup>+</sup> )                      |                  |               |                       |                                                                                                                                                                                                            |
| 3340.3              | (23/2 <sup>+</sup> )                                     | 704.7 3               | 100 7                 | 2635.5  | (21/2 <sup>+</sup> )                      | M1               |               | 0.00248               | $\alpha(\text{K})=0.00217$ 3; $\alpha(\text{L})=0.000253$ 4;<br>$\alpha(\text{M})=4.74\times 10^{-5}$ 7<br>$\alpha(\text{N})=8.01\times 10^{-6}$ 12                                                        |
|                     |                                                          | 739.4 5               | 28.3 22               | 2600.7  | (19/2 <sup>+</sup> )                      |                  |               |                       |                                                                                                                                                                                                            |
| 3395.9              | (19/2 <sup>-</sup> )                                     | 689.1 5               | 64 5                  | 2706.6  | (15/2 <sup>-</sup> )                      |                  |               |                       |                                                                                                                                                                                                            |
|                     |                                                          | 974.1 3               | 100 7                 | 2421.9  | (17/2 <sup>+</sup> )                      | E1               |               | 4.52×10 <sup>-4</sup> | $\alpha(\text{K})=0.000397$ 6; $\alpha(\text{L})=4.52\times 10^{-5}$ 7; $\alpha(\text{M})=8.44\times 10^{-6}$ 12<br>$\alpha(\text{N})=1.422\times 10^{-6}$ 20                                              |
| 3446.2              | (7/2 <sup>+</sup> ,9/2 <sup>+</sup> ,11/2 <sup>+</sup> ) | 3181.8 4              | 100                   | 264.382 | (7/2) <sup>+</sup>                        |                  |               |                       |                                                                                                                                                                                                            |
| 3516.7              | (17/2 <sup>+</sup> )                                     | 916.0                 | 100                   | 2600.7  | (19/2 <sup>+</sup> )                      |                  |               |                       |                                                                                                                                                                                                            |

Adopted Levels, Gammas (continued)

$\gamma(^{99}\text{Pd})$  (continued)

| $E_i(\text{level})$ | $J_i^\pi$                                                | $E_\gamma^{\ddagger}$           | $I_\gamma^{\ddagger}$     | $E_f$                      | $J_f^\pi$                                                            | Mult. <sup>†</sup> | $\alpha^\&$           | Comments                                                                                                                                                                                       |
|---------------------|----------------------------------------------------------|---------------------------------|---------------------------|----------------------------|----------------------------------------------------------------------|--------------------|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3546.7              | (25/2 <sup>+</sup> )                                     | 206.3 5<br>911.4 3              | 13.9 13<br>100 7          | 3340.3<br>2635.5           | (23/2 <sup>+</sup> )<br>(21/2 <sup>+</sup> )                         | E2                 | 1.24×10 <sup>-3</sup> | $\alpha(\text{K})=0.001087$ 16; $\alpha(\text{L})=0.0001292$ 19; $\alpha(\text{M})=2.42\times 10^{-5}$ 4<br>$\alpha(\text{N})=4.07\times 10^{-6}$ 6                                            |
| 3594.4              | (7/2 <sup>+</sup> ,9/2 <sup>+</sup> ,11/2 <sup>+</sup> ) | 3330 1                          | 100                       | 264.382                    | (7/2 <sup>+</sup> )                                                  |                    |                       |                                                                                                                                                                                                |
| 3936.2              | (25/2 <sup>+</sup> )                                     | 389.5 5                         | 100                       | 3546.7                     | (25/2 <sup>+</sup> )                                                 |                    |                       |                                                                                                                                                                                                |
| 4014.7              | (23/2 <sup>-</sup> )                                     | 467.8 7<br>618.9 3              | 8.7 7<br>89 6             | 3546.7<br>3395.9           | (25/2 <sup>+</sup> )<br>(19/2 <sup>-</sup> )                         | E2                 | 0.00329               | $\alpha(\text{K})=0.00286$ 4; $\alpha(\text{L})=0.000353$ 5; $\alpha(\text{M})=6.63\times 10^{-5}$ 10<br>$\alpha(\text{N})=1.107\times 10^{-5}$ 16                                             |
|                     |                                                          | 674.3 7<br>687.0 7<br>1379.2 3  | 6.7 7<br>4.7 7<br>100 8   | 3340.3<br>3327.7<br>2635.5 | (23/2 <sup>+</sup> )<br>(21/2 <sup>+</sup> )<br>(21/2 <sup>+</sup> ) | E1                 | 3.88×10 <sup>-4</sup> | $\alpha(\text{K})=0.000211$ 3; $\alpha(\text{L})=2.38\times 10^{-5}$ 4; $\alpha(\text{M})=4.45\times 10^{-6}$ 7<br>$\alpha(\text{N})=7.51\times 10^{-7}$ 11; $\alpha(\text{IPF})=0.0001479$ 21 |
| 4039.8              | (27/2 <sup>+</sup> )                                     | 493.2 3                         | 100 6                     | 3546.7                     | (25/2 <sup>+</sup> )                                                 | M1                 | 0.00576               | $\alpha(\text{K})=0.00504$ 7; $\alpha(\text{L})=0.000593$ 9; $\alpha(\text{M})=0.0001112$ 16<br>$\alpha(\text{N})=1.88\times 10^{-5}$ 3                                                        |
|                     |                                                          | 699.3 5<br>719.8 5              | 10.4 8<br>100             | 3340.3<br>4039.8           | (23/2 <sup>+</sup> )<br>(27/2 <sup>+</sup> )                         |                    |                       |                                                                                                                                                                                                |
| 4760.1              | (29/2 <sup>+</sup> )                                     | 758.5 3                         | 100 6                     | 4014.7                     | (23/2 <sup>-</sup> )                                                 |                    |                       |                                                                                                                                                                                                |
| 4773.3              | (27/2 <sup>-</sup> )                                     | 837.2 7<br>975.8 5              | 3.0 4<br>100              | 3936.2<br>4039.8           | (25/2 <sup>+</sup> )<br>(27/2 <sup>+</sup> )                         |                    |                       |                                                                                                                                                                                                |
| 5015.6              | (29/2 <sup>+</sup> )                                     | 315.8 7                         | 8.2 7                     | 5015.6                     | (29/2 <sup>+</sup> )                                                 |                    |                       |                                                                                                                                                                                                |
| 5331.6              | (31/2 <sup>+</sup> )                                     | 570.8 7<br>1291.9 3             | 14 4<br>100 9             | 4760.1<br>4039.8           | (29/2 <sup>+</sup> )<br>(27/2 <sup>+</sup> )                         |                    |                       |                                                                                                                                                                                                |
| 5510.6              | (33/2 <sup>+</sup> )                                     | 178.9 7                         | 100                       | 5331.6                     | (31/2 <sup>+</sup> )                                                 |                    |                       |                                                                                                                                                                                                |
| 5781.1              | (31/2 <sup>-</sup> )                                     | 765.8 7<br>1007.8 3<br>1020.8 7 | 1.4 4<br>100 7<br>7.2 7   | 5015.6<br>4773.3<br>4760.1 | (29/2 <sup>+</sup> )<br>(27/2 <sup>-</sup> )<br>(29/2 <sup>+</sup> ) | E2                 |                       |                                                                                                                                                                                                |
| 6541.4              | (35/2 <sup>+</sup> )                                     | 1209.9 5                        | 100                       | 5331.6                     | (31/2 <sup>+</sup> )                                                 |                    |                       |                                                                                                                                                                                                |
| 6598.6              |                                                          | 1267.0 7                        | 100                       | 5331.6                     | (31/2 <sup>+</sup> )                                                 |                    |                       |                                                                                                                                                                                                |
| 6803.8              | (35/2 <sup>-</sup> )                                     | 1022.7 3                        | 100                       | 5781.1                     | (31/2 <sup>-</sup> )                                                 |                    |                       |                                                                                                                                                                                                |
| 7074.9              | (37/2 <sup>+</sup> )                                     | 533.3 7<br>1564.4 7             | 100 8<br>19 4             | 6541.4<br>5510.6           | (35/2 <sup>+</sup> )<br>(33/2 <sup>+</sup> )                         |                    |                       |                                                                                                                                                                                                |
| 7124.9              |                                                          | 1793.3 7                        | 100                       | 5331.6                     | (31/2 <sup>+</sup> )                                                 |                    |                       |                                                                                                                                                                                                |
| 7300.3              | (37/2 <sup>+</sup> )                                     | 759.1 5<br>1789.5 7             | 100 9<br>17 4             | 6541.4<br>5510.6           | (35/2 <sup>+</sup> )<br>(33/2 <sup>+</sup> )                         |                    |                       |                                                                                                                                                                                                |
| 7915.3              |                                                          | 1316.7 7                        | 100                       | 6598.6                     |                                                                      |                    |                       |                                                                                                                                                                                                |
| 8010.9              | (39/2 <sup>+</sup> )                                     | 710.6 5<br>935.8 7<br>1469.6 7  | 100 14<br>43 4<br>25.9 18 | 7300.3<br>7074.9<br>6541.4 | (37/2 <sup>+</sup> )<br>(37/2 <sup>+</sup> )<br>(35/2 <sup>+</sup> ) |                    |                       |                                                                                                                                                                                                |
| 8183.3              | (39/2 <sup>-</sup> )                                     | 1379.5 5                        | 100                       | 6803.8                     | (35/2 <sup>-</sup> )                                                 |                    |                       |                                                                                                                                                                                                |
| 8454.9              |                                                          | 1330.0 7                        | 100                       | 7124.9                     |                                                                      |                    |                       |                                                                                                                                                                                                |
| 9412.8              | (43/2 <sup>-</sup> )                                     | 1229.5 7                        | 100                       | 8183.3                     | (39/2 <sup>-</sup> )                                                 |                    |                       |                                                                                                                                                                                                |
| 9513.5              | (43/2)                                                   | 1330.2 7                        | 100                       | 8183.3                     | (39/2 <sup>-</sup> )                                                 |                    |                       |                                                                                                                                                                                                |
| 9844.3              | (45/2)                                                   | 431.4 7                         | 100                       | 9412.8                     | (43/2 <sup>-</sup> )                                                 |                    |                       |                                                                                                                                                                                                |



Adopted Levels, Gammas (continued)

$\gamma(^{99}\text{Pd})$  (continued)

| $E_i(\text{level})$ | $J_i^\pi$ | $E_\gamma^\ddagger$ | $I_\gamma^\ddagger$   | $E_f$  | $J_f^\pi$            |
|---------------------|-----------|---------------------|-----------------------|--------|----------------------|
| 9981.3              |           | 1798.0 7            | 100                   | 8183.3 | (39/2 <sup>-</sup> ) |
| 11457.5             | (47/2)    | 1613.2 7            | 83 23                 | 9844.3 | (45/2)               |
|                     |           | 1944.1 7            | 1.0×10 <sup>2</sup> 4 | 9513.5 | (43/2)               |

<sup>†</sup> From DCO ratios and pol measurement in (HI,xn $\gamma$ ) ([2011Si04](#)) or from  $\gamma(\theta)$  in ( $\alpha$ ,n $\gamma$ ) ([1988Du07](#)), (HI,xn $\gamma$ ) ([1977Pi01](#)) and linear polarization measurements of [1975Ki13](#) in (HI,xn $\gamma$ ).

<sup>‡</sup> Mostly from  $\beta^+$  decay, (HI,xn $\gamma$ ).

<sup>#</sup> From ( $\alpha$ ,n $\gamma$ ). If No value given it was assumed  $\delta=1.00$  for E2/M1,

<sup>@</sup> Placement not consistent with  $\Delta(J^\pi)$ .

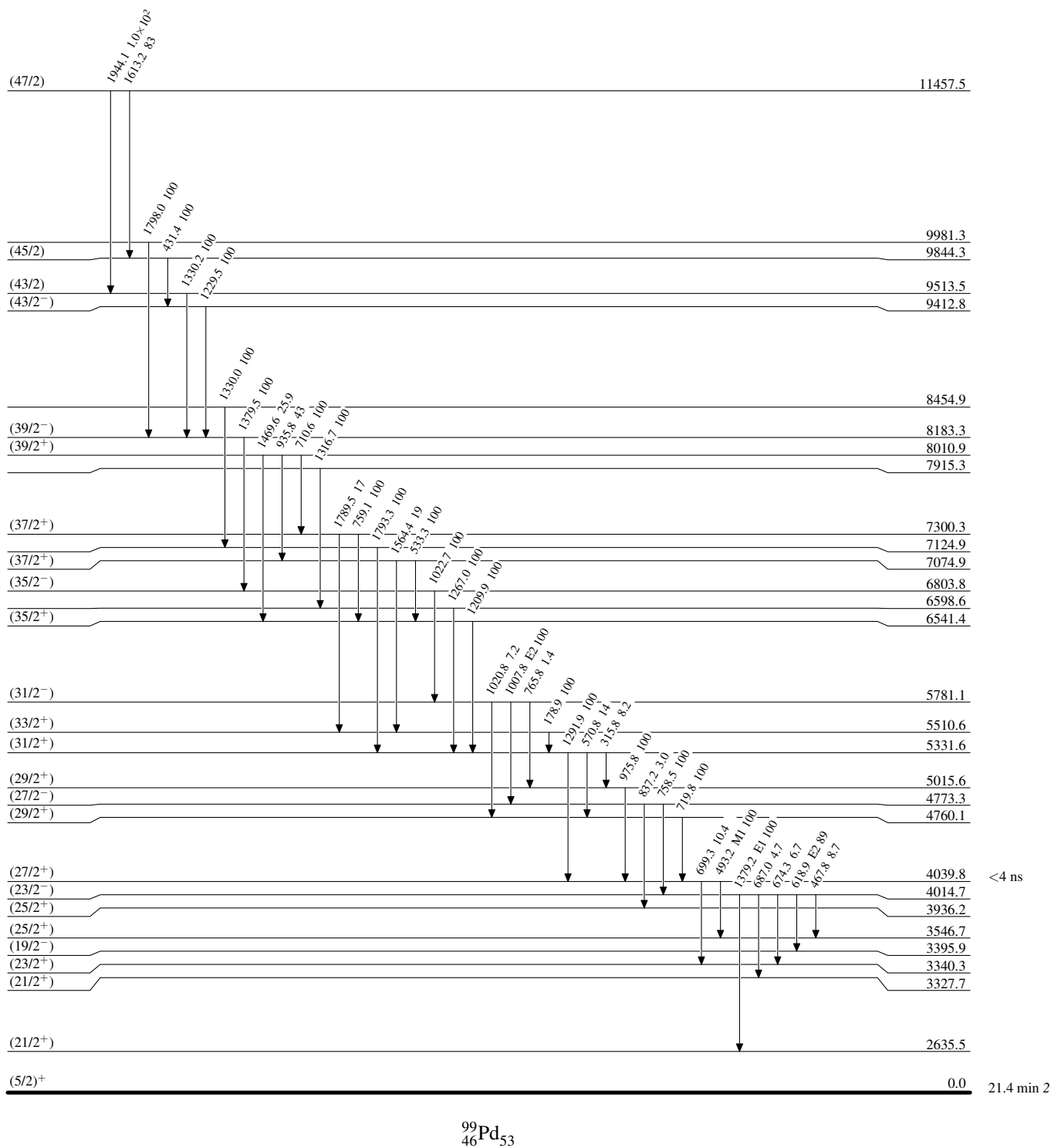
<sup>&</sup> [Additional information 1](#).

<sup>a</sup> If No value given it was assumed  $\delta=1.00$  for E2/M1,  $\delta=1.00$  for E3/M2 and  $\delta=0.10$  for the other multipolarities.

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

Adopted Levels, GammasLevel Scheme

Intensities: Relative photon branching from each level

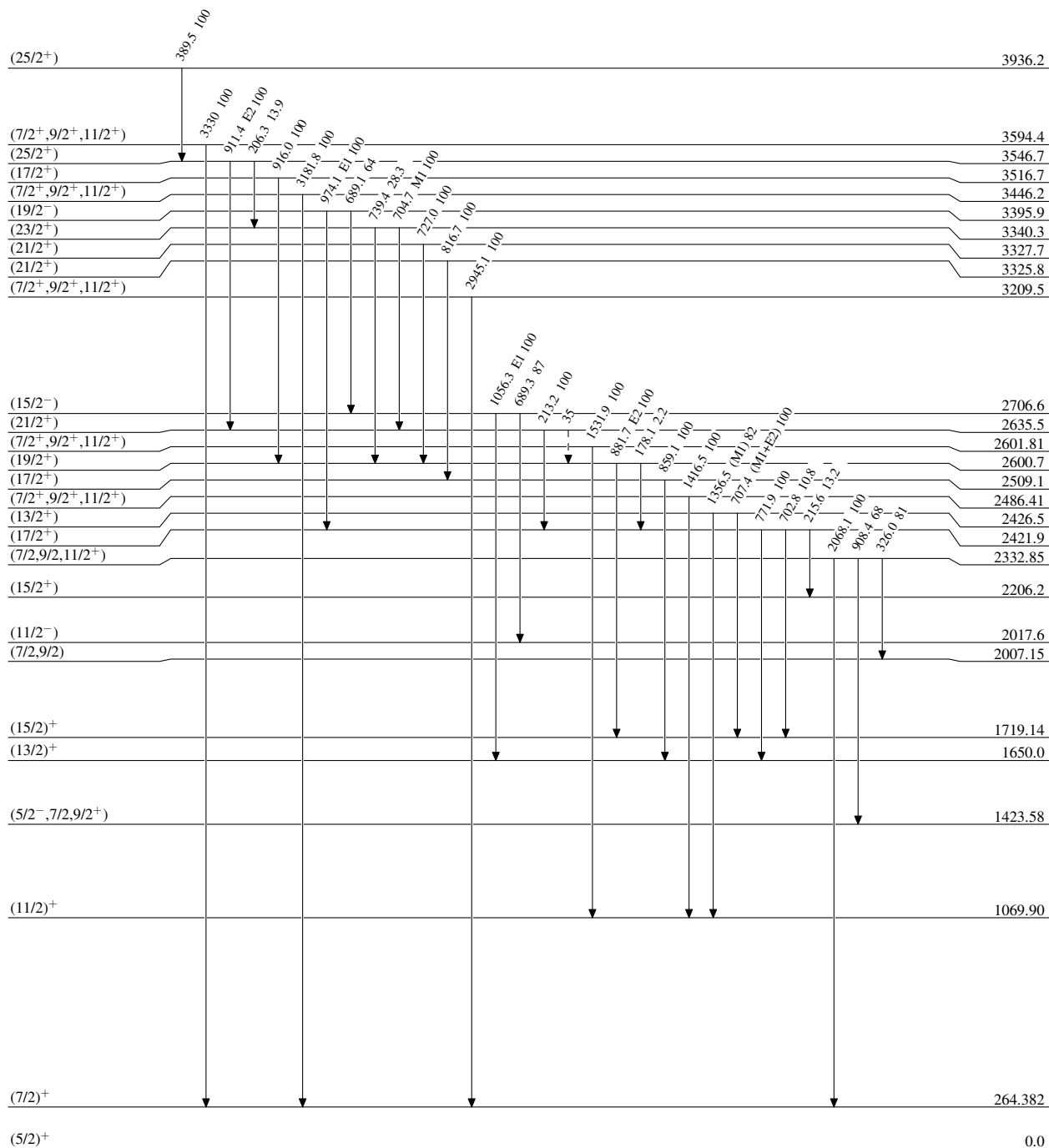


Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

-----►  $\gamma$  Decay (Uncertain)

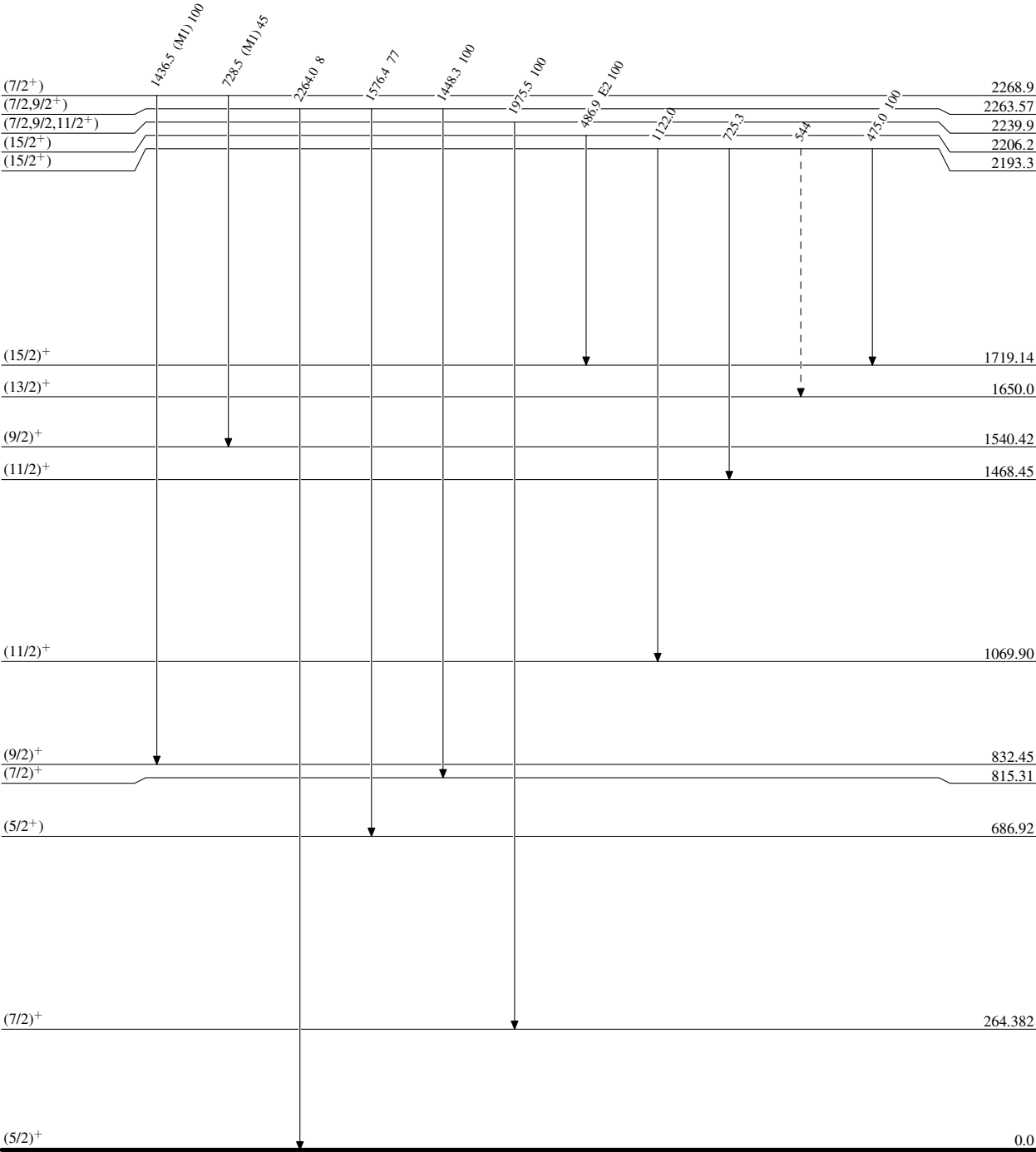
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

-----►  $\gamma$  Decay (Uncertain)



<sup>99</sup>Pd<sub>53</sub>

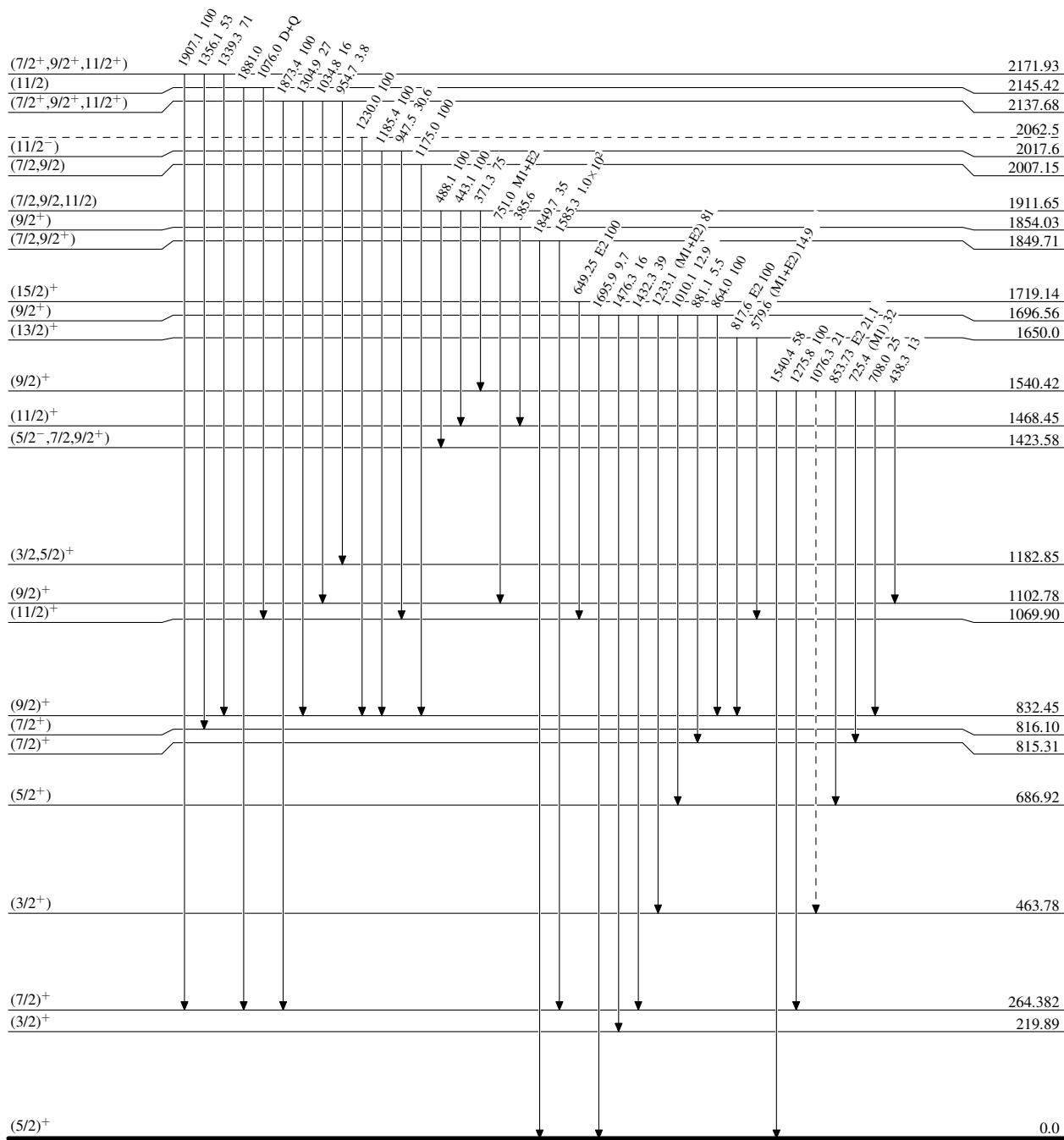
**Adopted Levels, Gammas**

Legend

**Level Scheme (continued)**

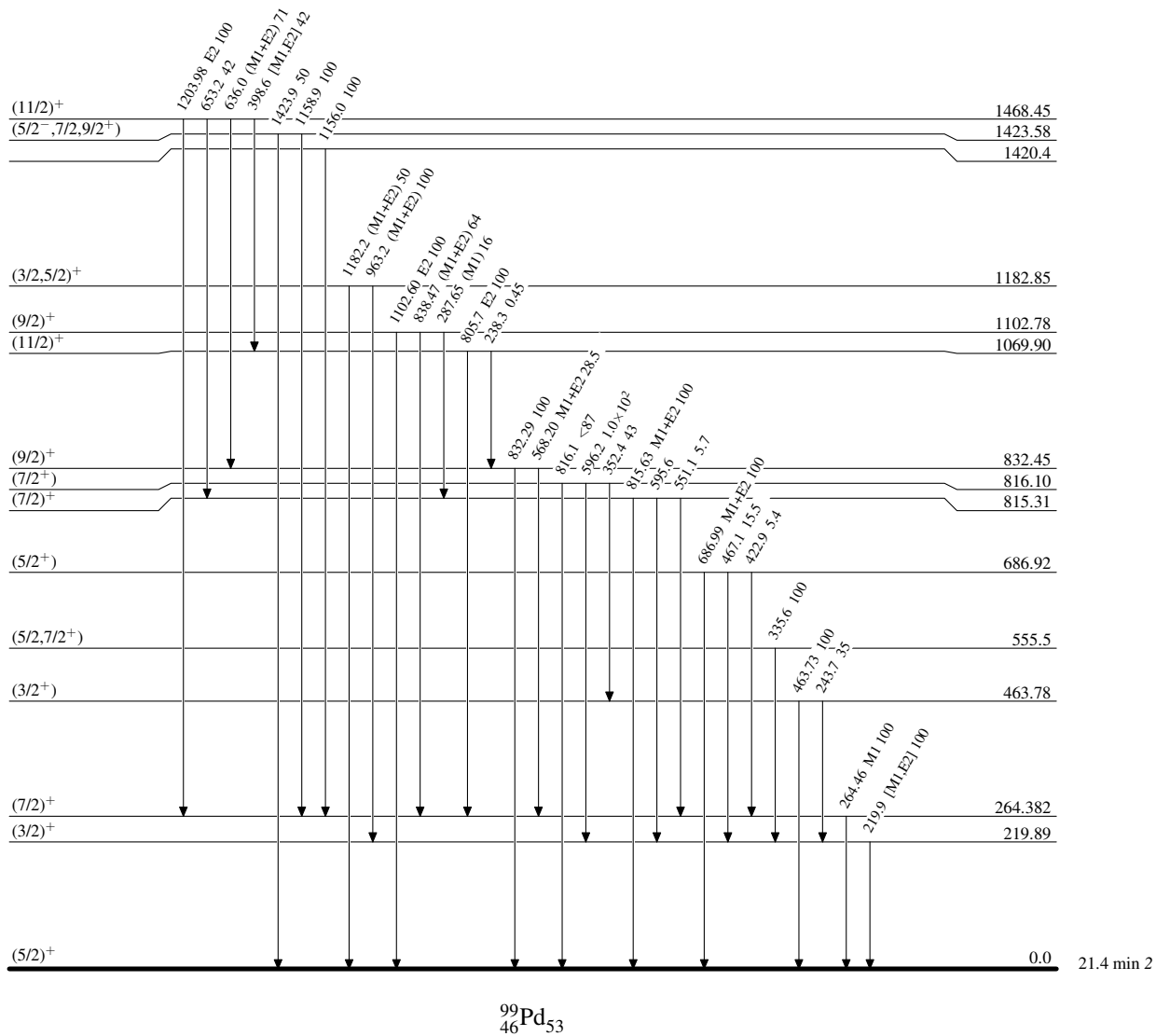
Intensities: Relative photon branching from each level

-----►  $\gamma$  Decay (Uncertain)



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

Intensities: Relative photon branching from each level



Adopted Levels, Gammas