

Adopted Levels, Gammas

| Type            | Author         | History<br>Citation | Literature Cutoff Date |
|-----------------|----------------|---------------------|------------------------|
| Full Evaluation | A. A. Sonzogni | NDS 103,1 (2004)    | 31-Jul-2004            |

$Q(\beta^-) = -3731.20$ ;  $S(n) = 9467.811$ ;  $S(p) = 8168.13$ ;  $Q(\alpha) = -1494.53$  [2012Wa38](#)

Note: Current evaluation has used the following Q record  $-3731.2094677$   $118167.94$   $-1493.19$  [2003Au03](#).

 $^{134}\text{Ba}$  LevelsCross Reference (XREF) Flags

|          |                                                  |          |                                   |
|----------|--------------------------------------------------|----------|-----------------------------------|
| <b>A</b> | $^{134}\text{Cs}$ $\beta^-$ decay (2.0652 y)     | <b>F</b> | Coulomb excitation                |
| <b>B</b> | $^{134}\text{Ba}$ IT decay (2.63 $\mu\text{s}$ ) | <b>G</b> | $^{136}\text{Ba}(p,t)$            |
| <b>C</b> | $^{134}\text{La}$ $\varepsilon$ decay (6.45 min) | <b>H</b> | (HI,xn $\gamma$ )                 |
| <b>D</b> | $^{134}\text{Ba}(n,n'\gamma)$                    | <b>I</b> | $^{134}\text{Ba}(\gamma,\gamma')$ |
| <b>E</b> | $^{134}\text{Ba}(\alpha,\alpha')$                |          |                                   |

| E(level)                 | $J^\pi$           | $T_{1/2}^\dagger$ | XREF      | Comments                                                                                                                                                                  |
|--------------------------|-------------------|-------------------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0.0 <sup>a</sup>         | 0 <sup>+</sup>    | stable            | ABCDEFGHI |                                                                                                                                                                           |
| 604.7223 <sup>a</sup> 19 | 2 <sup>+</sup>    | 5.12 ps 9         | ABCDEFGH  | $\mu = +0.8410$ (1989Ra17)<br>$Q = -0.268$ or $+0.158$ (1989Ra17).<br>$J^\pi$ : L(p,t)=2.<br>$T_{1/2}$ : from B(E2)=0.679 11 (Coul. ex.).<br>$\mu$ , $Q$ : from Coul. ex. |
| 1167.968 3               | 2 <sup>+</sup>    | 2.7 ps 8          | A CD FGH  | $J^\pi$ : L(p,t)=2.<br>$T_{1/2}$ : from B(E2) in Coul. ex.                                                                                                                |
| 1400.590 <sup>a</sup> 4  | 4 <sup>+</sup>    | 0.83 ps 9         | ABCD FGH  | $J^\pi$ : L(p,t)=4.<br>$T_{1/2}$ : from B(E2) in Coul. ex., $T_{1/2} = 8.7$ ps 17 from $^{134}\text{Cs}$ $\beta^-$ decay.                                                 |
| 1643.336 4               | 3 <sup>+</sup>    | 78 ps 21          | A CD H    | $J^\pi$ : M1+E2 $\gamma$ to 2 <sup>+</sup> ; $\gamma\gamma(\theta)$ .<br>$T_{1/2}$ : from $\beta\gamma(t)$ ( $^{134}\text{Cs}$ $\beta^-$ decay).                          |
| 1760.555 22              | 0 <sup>+</sup>    |                   | CD G      | $J^\pi$ : E0 transition to g.s.                                                                                                                                           |
| 1969.921 4               | 4 <sup>+</sup>    |                   | A DE H    | $J^\pi$ : M1+E2 $\gamma$ to 4 <sup>+</sup> ; $\gamma\gamma(\theta)$ .                                                                                                     |
| 1986.35 21               | 5 <sup>-</sup>    | 52 ns 6           | D GH      | $J^\pi$ : L(p,t)=5.<br>$T_{1/2}$ : from (HI,xn $\gamma$ ).                                                                                                                |
| 2029.242 18              | 2 <sup>+</sup>    | 0.159 ps 16       | CD        | $J^\pi$ : E2 $\gamma$ to 0 <sup>+</sup> g.s.                                                                                                                              |
| 2088.288 17              | 2 <sup>+</sup>    | 0.059 ps 5        | CD F      | $J^\pi$ : E2 $\gamma$ to 0 <sup>+</sup> g.s.                                                                                                                              |
| 2118.195 9               | (4 <sup>+</sup> ) |                   | D         | $J^\pi$ : $\gamma$ 's to 4 <sup>+</sup> , 2 <sup>+</sup> levels; no $\gamma$ 's to 0 <sup>+</sup> , 3 <sup>+</sup> levels.                                                |
| 2159.683 21              | (0 <sup>+</sup> ) | 0.104 ps +28-21   | CD G      | $J^\pi$ : L(p,t)=0, E2 $\gamma$ to 2 <sup>+</sup> .                                                                                                                       |
| 2164.620 12              | (4 <sup>+</sup> ) |                   | D         | $J^\pi$ : $\gamma(\theta)$ and excitation function in (n,n' $\gamma$ ).                                                                                                   |
| 2211.3 <sup>a</sup> 3    | (6 <sup>+</sup> ) |                   | B D H     | $J^\pi$ : excitation function in (n,n' $\gamma$ ).                                                                                                                        |
| 2244.99 5                |                   |                   | D         |                                                                                                                                                                           |
| 2254.95 14               | 3 <sup>-</sup>    |                   | CDEF      | $J^\pi$ : $\sigma(\theta)$ in Coul. ex., ( $\alpha,\alpha'$ ) data.                                                                                                       |
| 2271.57 24               | 7 <sup>-</sup>    |                   | D GH      | $J^\pi$ : L(p,t)=7.                                                                                                                                                       |
| 2279.87 3                | (2,3)             |                   | D         | $J^\pi$ : $\gamma(\theta)$ in (n,n' $\gamma$ ); decay pattern.                                                                                                            |
| 2285.34 4                | (5 <sup>+</sup> ) |                   | D         | $J^\pi$ : E2 $\gamma$ to 3 <sup>+</sup> .                                                                                                                                 |
| 2299.7 3                 | (6 <sup>+</sup> ) |                   | D H       | $J^\pi$ : $\gamma$ to 4 <sup>+</sup> ; excitation function in (n,n' $\gamma$ ).                                                                                           |
| 2311                     | (1) <sup>@</sup>  |                   | I         |                                                                                                                                                                           |
| 2334.76 6                | 1,2 <sup>+</sup>  | 0.21 ps +10-6     | CD        | $J^\pi$ : $\gamma$ to 0 <sup>+</sup> .                                                                                                                                    |
| 2336.82 3                | 0 <sup>+</sup>    | 0.097 ps +28-21   | CD G      | $J^\pi$ : E0 transition to g.s.                                                                                                                                           |
| 2371.02 7                | 2 <sup>+</sup>    | 0.46 ps +21-12    | D         | $J^\pi$ : $\gamma(\theta)$ in (n,n' $\gamma$ ); RUL.                                                                                                                      |
| 2377.1 4                 | (6)               |                   | D H       | $J^\pi$ : $\gamma(\theta)$ and excitation function in (n,n' $\gamma$ ).                                                                                                   |
| 2379.112 18              | 0 <sup>+</sup>    |                   | CD G      | $J^\pi$ : E0 transition to g.s.                                                                                                                                           |
| 2464.28 6                | (2 <sup>+</sup> ) |                   | D         | $J^\pi$ : $\gamma(\theta)$ in (n,n' $\gamma$ ).                                                                                                                           |
| 2469.58 6                | (5 <sup>+</sup> ) |                   | D         | $J^\pi$ : E2 $\gamma$ to 3 <sup>+</sup> .                                                                                                                                 |
| 2479 10                  | 4 <sup>+</sup>    |                   | G         | $J^\pi$ : L(p,t)=4.                                                                                                                                                       |

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**Adopted Levels, Gammas (continued)** $^{134}\text{Ba}$  Levels (continued)

| E(level)              | J $^{\pi}$                          | T $_{1/2}$ <sup>†</sup> | XREF  | Comments                                                                                                                                                                                                                     |
|-----------------------|-------------------------------------|-------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2480.34 5             | (2,3)&                              |                         | D     | J $^{\pi}$ : $\gamma(\theta)$ in (n,n' $\gamma$ ).                                                                                                                                                                           |
| 2488.434 21           | 0 <sup>+</sup>                      | 0.13 ps +9-4            | CD G  | J $^{\pi}$ : E0 transition to g.s.                                                                                                                                                                                           |
| 2506.26 4             | (4 <sup>+</sup> )                   | 0.15 ps +23-7           | D     | J $^{\pi}$ : $\gamma(\theta)$ , excitation function in (n,n' $\gamma$ ).                                                                                                                                                     |
| 2531.31 22            | (5 <sup>-</sup> to 7 <sup>-</sup> ) |                         | D     | J $^{\pi}$ : $\gamma$ 's to 7 <sup>-</sup> and 5 <sup>-</sup> levels.                                                                                                                                                        |
| 2536.91 5             | 0 to 2                              | 0.15 ps +19-6           | CD    | J $^{\pi}$ : log ft=7.5 from 1 <sup>+</sup> parent.                                                                                                                                                                          |
| 2564.712 19           | 1 <sup>+</sup> ,2 <sup>+</sup> &    | 0.06 ps +12-4           | CD    |                                                                                                                                                                                                                              |
| 2570.87 3             | 1 <sup>(+)</sup> @                  |                         | CD I  |                                                                                                                                                                                                                              |
| 2574.31 10            | (2 <sup>+</sup> )                   |                         | D     | J $^{\pi}$ : $\gamma(\theta)$ in (n,n' $\gamma$ ).                                                                                                                                                                           |
| 2599.88 4             | 2 <sup>+</sup>                      |                         | CD    | J $^{\pi}$ : M1+E2 $\gamma$ to 2 <sup>+</sup> ; $\gamma(\theta)$ in (n,n' $\gamma$ ).                                                                                                                                        |
| 2656.23 8             | (2 <sup>+</sup> )                   |                         | CD    | J $^{\pi}$ : $\gamma$ to 0 <sup>+</sup> g.s., possible $\gamma$ to 4 <sup>+</sup> .                                                                                                                                          |
| 2661.88 5             | 3 to 5                              |                         | D     | $\gamma$ to 3 <sup>+</sup> .                                                                                                                                                                                                 |
| 2677.76 8             | 3,4                                 |                         | D     | J $^{\pi}$ : $\gamma$ 's to 2 <sup>+</sup> levels.                                                                                                                                                                           |
| 2696.58 5             | 1,2                                 |                         | CD    | J $^{\pi}$ : $\gamma$ 's to 0 <sup>+</sup> and 2 <sup>+</sup> levels.                                                                                                                                                        |
| 2729.23 4             | 1,2 <sup>+</sup>                    |                         | CD G  | J $^{\pi}$ : $\gamma$ 's to 0 <sup>+</sup> , 2 <sup>+</sup> levels.                                                                                                                                                          |
| 2747.965 24           | 2 <sup>+</sup>                      |                         | CD G  | J $^{\pi}$ : $\gamma$ 's to 0 <sup>+</sup> , 4 <sup>+</sup> . M1+E2 $\gamma$ to $\pi=+$ .                                                                                                                                    |
| 2758.9? 3             | 1,2 <sup>+</sup>                    |                         | C     | J $^{\pi}$ : $\gamma$ 's to 0 <sup>+</sup> , 2 <sup>+</sup> levels.                                                                                                                                                          |
| 2760.74 12            | 1,2&                                |                         | CD    |                                                                                                                                                                                                                              |
| 2773.73 10            | 3,4                                 |                         | D     | J $^{\pi}$ : $\gamma$ to 2 <sup>+</sup> , 4 <sup>+</sup> levels.                                                                                                                                                             |
| 2779.9 10             |                                     |                         | H     |                                                                                                                                                                                                                              |
| 2806                  | (1)@                                |                         | I     |                                                                                                                                                                                                                              |
| 2823.72 11            | 1-@                                 |                         | D G I |                                                                                                                                                                                                                              |
| 2828.50 4             | 1 <sup>+</sup> ,2 <sup>+</sup> &    |                         | C G   | J $^{\pi}$ : M1,E2 $\gamma$ to 2 <sup>+</sup> , $\gamma$ to 0 <sup>+</sup> .                                                                                                                                                 |
| 2835.9 <sup>a</sup> 4 | (8 <sup>+</sup> )                   |                         | B D H |                                                                                                                                                                                                                              |
| 2851.26 6             | 2 <sup>+</sup>                      |                         | CD G  | J $^{\pi}$ : E2 $\gamma$ to 0 <sup>+</sup> g.s.                                                                                                                                                                              |
| 2874 8                | 0 <sup>+</sup> #                    |                         | G     |                                                                                                                                                                                                                              |
| 2876.89 10            | 3 to 5                              |                         | D     | J $^{\pi}$ : $\gamma$ to 3 <sup>+</sup> .                                                                                                                                                                                    |
| 2887.04 4             | 1,2                                 |                         | C     | J $^{\pi}$ : $\gamma$ 's to 2 <sup>+</sup> , 3 <sup>+</sup> levels, log ft=6.8 from decay of 1 <sup>+</sup> level.                                                                                                           |
| 2913.1 4              |                                     |                         | H     |                                                                                                                                                                                                                              |
| 2917.61 6             | 2                                   |                         | CD    | J $^{\pi}$ : $\gamma$ 's to 4 <sup>+</sup> , 2 <sup>+</sup> levels, log ft=7.3 in decay of 1 <sup>+</sup> level.                                                                                                             |
| 2925.99 15            | 3 to 5                              |                         | D     | J $^{\pi}$ : $\gamma$ to 3 <sup>+</sup> .                                                                                                                                                                                    |
| 2938.93 20            | 1 <sup>+</sup> @                    |                         | CD I  |                                                                                                                                                                                                                              |
| 2943.90 14            | 2 to 4                              |                         | D     | J $^{\pi}$ : $\gamma$ to 2 <sup>+</sup> .                                                                                                                                                                                    |
| 2950.56 24            | 3,4                                 |                         | D     | J $^{\pi}$ : $\gamma$ 's to 2 <sup>+</sup> and 3 <sup>+</sup> levels.                                                                                                                                                        |
| 2957.2 5              | (10 <sup>+</sup> )                  | 2.63 $\mu$ s 14         | B H   | %IT=100<br>$\mu=-2.0$ I<br>J $^{\pi}$ : (E2) $\gamma$ to (8 <sup>+</sup> ); systematics, configuration=( $\nu$ h <sub>11/2</sub> ) <sup>-2</sup> .<br>T <sub>1/2</sub> : from (H1,xn $\gamma$ ).<br>$\mu$ : DPAD (1989Ra17). |
| 2996 8                | (0) <sup>+</sup> #                  |                         | G     |                                                                                                                                                                                                                              |
| 3004.41 15            | 1,2 <sup>+</sup>                    |                         | C     | J $^{\pi}$ : $\gamma$ 's to 0 <sup>+</sup> , 2 <sup>+</sup> levels.                                                                                                                                                          |
| 3011                  | (1)@                                |                         | I     |                                                                                                                                                                                                                              |
| 3011.7 11             |                                     |                         | H     |                                                                                                                                                                                                                              |
| 3027.38 6             | (1 <sup>+</sup> )@                  |                         | CD I  |                                                                                                                                                                                                                              |
| 3061.29 6             | 2 <sup>(+)</sup>                    |                         | CD    | J $^{\pi}$ : $\gamma$ 's to 0 <sup>+</sup> , 2 <sup>+</sup> and 4 <sup>+</sup> .                                                                                                                                             |
| 3068.85? 13           | 1,2 <sup>+</sup>                    |                         | C     | J $^{\pi}$ : $\gamma$ 's to 0 <sup>+</sup> , 2 <sup>+</sup> levels.                                                                                                                                                          |
| 3074.72? 13           | (2)                                 |                         | C     | J $^{\pi}$ : $\gamma$ 's to 3 <sup>+</sup> , 4 <sup>+</sup> levels, log ft=7.4 from decay of 1 <sup>+</sup> level.                                                                                                           |
| 3079 10               | 4 <sup>+</sup>                      |                         | G     | J $^{\pi}$ : L(p,t)=4.                                                                                                                                                                                                       |
| 3086.65 10            | 1 <sup>+</sup> ,2 <sup>+</sup>      |                         | CD    | J $^{\pi}$ : $\gamma$ 's to 0 <sup>+</sup> , 2 <sup>+</sup> and 3 <sup>+</sup> .                                                                                                                                             |
| 3160.07 19            | 1,2 <sup>+</sup>                    |                         | CD    | J $^{\pi}$ : $\gamma$ 's to 0 <sup>+</sup> , 2 <sup>+</sup> .                                                                                                                                                                |
| 3181 8                | (0) <sup>+</sup> #                  |                         | G     |                                                                                                                                                                                                                              |
| 3216.3? 6             | 1,2 <sup>+</sup>                    |                         | C     | J $^{\pi}$ : $\gamma$ 's to 0 <sup>+</sup> , 2 <sup>+</sup> levels.                                                                                                                                                          |
| 3240.5 4              | (9 <sup>-</sup> )                   |                         | H     | J $^{\pi}$ : stretched (E2) $\gamma$ to 7 <sup>-</sup> .                                                                                                                                                                     |

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**Adopted Levels, Gammas (continued)** $^{134}\text{Ba}$  Levels (continued)

| E(level)    | J $\pi$                         | XREF   | Comments                                                                                                        |
|-------------|---------------------------------|--------|-----------------------------------------------------------------------------------------------------------------|
| 3242.3 8    |                                 | GH     |                                                                                                                 |
| 3245.88 19  | (1 <sup>+</sup> )@              | CD G I |                                                                                                                 |
| 3262.0 3    | 2 to 4                          | D      | J $\pi$ : $\gamma$ to 2 <sup>+</sup> .                                                                          |
| 3272.10 5   | 1 <sup>-</sup> , 2 <sup>-</sup> | C      | J $\pi$ : $\gamma$ 's to 2 <sup>+</sup> , 3 <sup>-</sup> levels, log ft=6.8 from decay of 1 <sup>+</sup> level. |
| 3311.3 8    |                                 | H      |                                                                                                                 |
| 3314.56 18  | 2,3                             | D      | J $\pi$ : $\gamma$ 's to 2 <sup>+</sup> , 4 <sup>+</sup> .                                                      |
| 3327.25 13  | (1 <sup>+</sup> )@              | CD I   |                                                                                                                 |
| 3328.3 11   |                                 | H      |                                                                                                                 |
| 3343        | (1)@                            | I      |                                                                                                                 |
| 3368.97 6   | 1,2                             | CD     | J $\pi$ : $\gamma$ 's to 0 <sup>+</sup> , 2 <sup>+</sup> and 3 <sup>-</sup> levels.                             |
| 3371.79 20  | 2 to 4                          | D      | J $\pi$ : $\gamma$ to 2 <sup>+</sup> .                                                                          |
| 3408.72 17  | 1,2                             | CD G   | J $\pi$ : $\gamma$ 's to 0 <sup>+</sup> , 2 <sup>+</sup> and 3 <sup>+</sup> levels.                             |
| 3432.15? 10 | 1,2 <sup>+</sup>                | C      | J $\pi$ : $\gamma$ 's to 0 <sup>+</sup> , 2 <sup>+</sup> .                                                      |
| 3443.39 20  | 2 to 4                          | D      | J $\pi$ : $\gamma$ to 2 <sup>+</sup> .                                                                          |
| 3450.27 8   | (1 <sup>+</sup> )@              | C I    |                                                                                                                 |
| 3451.0 4    | 1,2 <sup>+</sup>                | D      | J $\pi$ : $\gamma$ 's to 0 <sup>+</sup> , 2 <sup>+</sup> .                                                      |
| 3459.3 12   |                                 | H      |                                                                                                                 |
| 3471.1? 3   | 2 <sup>+</sup>                  | C      | J $\pi$ : $\gamma$ 's to 0 <sup>+</sup> , 2 <sup>+</sup> .                                                      |
| 3499.68 14  | (1,2)                           | C      | J $\pi$ : $\gamma$ 's to 2 <sup>+</sup> , log ft=7.3 from decay of 1 <sup>+</sup> level.                        |
| 3501 8      | (0) <sup>+</sup> #              | G      |                                                                                                                 |
| 3504.2 11   |                                 | H      |                                                                                                                 |
| 3548.5 4    | 1,2 <sup>+</sup>                | C      | J $\pi$ : $\gamma$ to 0 <sup>+</sup> , 2 <sup>+</sup> .                                                         |
| 3560        | 1@                              | I      |                                                                                                                 |
| 3589        | 1@                              | I      |                                                                                                                 |
| 3599.3 13   |                                 | H      |                                                                                                                 |
| 3617        | (1)@                            | I      |                                                                                                                 |
| 3618 8      | (0) <sup>+</sup> #              | G      |                                                                                                                 |
| 3635.9 11   |                                 | H      |                                                                                                                 |
| 3652.1? 5   | 1,2 <sup>+</sup>                | C      | J $\pi$ : $\gamma$ 's to 0 <sup>+</sup> , 2 <sup>+</sup> .                                                      |
| 3684.2 4    | 2 <sup>+</sup>                  | D      | J $\pi$ : E2 $\gamma$ to 0 <sup>+</sup> .                                                                       |
| 3705        | 1@                              | I      |                                                                                                                 |
| 3754 10     |                                 | G      |                                                                                                                 |
| 3783        | (1)@                            | I      |                                                                                                                 |
| 3836        | 1@                              | I      |                                                                                                                 |
| 3853.8 4    | 2 <sup>+</sup>                  | D      | J $\pi$ : E2 $\gamma$ to 0 <sup>+</sup> .                                                                       |
| 3899.1 11   |                                 | H      |                                                                                                                 |
| 3954.3 12   |                                 | H      |                                                                                                                 |
| 3980        | (1)@                            | I      |                                                                                                                 |
| 3992        | (1)@                            | I      |                                                                                                                 |
| 4001.4 5    |                                 | H      |                                                                                                                 |
| 4019 10     |                                 | G      |                                                                                                                 |
| 4083.5 11   |                                 | H      |                                                                                                                 |
| 4517.4 12   |                                 | H      |                                                                                                                 |
| 4549.9 15   |                                 | H      |                                                                                                                 |
| 4635.2 15   |                                 | H      |                                                                                                                 |
| 5001.4 15   |                                 | H      |                                                                                                                 |
| 5015.4 15   |                                 | H      |                                                                                                                 |
| 5230.9 18   |                                 | H      |                                                                                                                 |

† From (n,n' $\gamma$ ), except as noted.

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**Adopted Levels, Gammas (continued)**

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 $^{134}\text{Ba}$  Levels (continued)

$\ddagger$   $\gamma$  to  $0^+$  g.s., transition multipolarities.

# L=0 in  $^{136}\text{Ba}(\text{p},\text{t})$ .

@ From  $(\gamma,\gamma')$ .

&  $\gamma(\theta)$  in  $(\text{n},\text{n}'\gamma)$ .

<sup>a</sup> Band(A): g.s. band.

Adopted Levels, Gammas (continued)

| $\gamma(^{134}\text{Ba})$ |                   |             |            |          |                |         |          |              |                                                                                                                                                                                                                     |
|---------------------------|-------------------|-------------|------------|----------|----------------|---------|----------|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $E_i(\text{level})$       | $J_i^\pi$         | $E_\gamma$  | $I_\gamma$ | $E_f$    | $J_f^\pi$      | Mult.   | $\delta$ | $\alpha^\pm$ | Comments                                                                                                                                                                                                            |
| 604.7223                  | 2 <sup>+</sup>    | 604.721 2   | 100        | 0.0      | 0 <sup>+</sup> | E2      |          | 0.00599      | $\alpha(K)=0.00503$ 16; $\alpha(L)=0.00072$ 2; B(E2)(W.u.)=33.6 6                                                                                                                                                   |
| 1167.968                  | 2 <sup>+</sup>    | 563.246 5   | 100.00 17  | 604.7223 | 2 <sup>+</sup> | M1+E2   | -7.4 9   | 0.00727 2    | $\alpha(K)=0.00609$ 1; $\alpha(L)=0.00089$ ; B(E2)(W.u.)=73 22;<br>B(M1)(W.u.)=0.0007 3                                                                                                                             |
|                           |                   | 1167.968 5  | 21.47 6    | 0.0      | 0 <sup>+</sup> | E2      |          | 0.00131      | $\alpha(K)=0.00112$ 4; $\alpha(L)=0.00014$ 1; B(E2)(W.u.)=0.42 13                                                                                                                                                   |
| 1400.590                  | 4 <sup>+</sup>    | 232.6 @     | <0.0013    | 1167.968 | 2 <sup>+</sup> | [E2]    |          | 0.104        | $\alpha(K)=0.0825$ 25; $\alpha(L)=0.0171$ 6; $\alpha(M)=0.00361$ 11;<br>B(E2)(W.u.)=0.16 16                                                                                                                         |
|                           |                   | 795.864 4   | 100        | 604.7223 | 2 <sup>+</sup> | E2      |          | 0.00305      | $\alpha(K)=0.00258$ 8; $\alpha(L)=0.00035$ 1; B(E2)(W.u.)=52 6                                                                                                                                                      |
| 1643.336                  | 3 <sup>+</sup>    | 242.738 8   | 1.88 16    | 1400.590 | 4 <sup>+</sup> | (M1+E2) |          | 0.088 2      | $\alpha(K)=0.0728$ 9; $\alpha(L)=0.0121$ 25; $\alpha(M)=0.0025$ 6                                                                                                                                                   |
|                           |                   | 475.365 2   | 100.0 3    | 1167.968 | 2 <sup>+</sup> | M1+E2   | -10 3    | 0.0114       | $\alpha(K)=0.0096$ ; $\alpha(L)=0.00146$ ; $\alpha(M)=0.00030$ ;<br>B(E2)(W.u.)=4.3 12; B(M1)(W.u.)=1.5×10 <sup>-5</sup> 10                                                                                         |
|                           |                   | 1038.610 7  | 66.98 19   | 604.7223 | 2 <sup>+</sup> | M1+E2   | +0.83 11 | 0.00207 5    | $\alpha(K)=0.00177$ 4; $\alpha(L)=0.00022$ 1; B(E2)(W.u.)=0.024 8;<br>B(M1)(W.u.)=5.9×10 <sup>-5</sup> 17                                                                                                           |
| 1760.555                  | 0 <sup>+</sup>    | 592.58 3    | 94 6       | 1167.968 | 2 <sup>+</sup> |         |          |              |                                                                                                                                                                                                                     |
|                           |                   | 1155.83 3   | 100 5      | 604.7223 | 2 <sup>+</sup> | E2      |          | 0.00134      | $\alpha(K)=0.00115$ 4; $\alpha(L)=0.00015$ 1                                                                                                                                                                        |
|                           |                   | 1759.9 7    |            | 0.0      | 0 <sup>+</sup> | E0      |          |              |                                                                                                                                                                                                                     |
| 1969.921                  | 4 <sup>+</sup>    | 326.589 13  | 0.105 7    | 1643.336 | 3 <sup>+</sup> | [M1+E2] |          | 0.037 2      | $\alpha(K)=0.031$ 3; $\alpha(L)=0.0047$ 3; $\alpha(M)=0.00097$ 8                                                                                                                                                    |
|                           |                   | 569.331 3   | 100.00 11  | 1400.590 | 4 <sup>+</sup> | M1+E2   | +0.26 1  | 0.0096       | $\alpha(K)=0.00816$ 1; $\alpha(L)=0.00105$                                                                                                                                                                          |
|                           |                   | 801.953 4   | 56.5 1     | 1167.968 | 2 <sup>+</sup> | E2      |          | 0.00300      | $\alpha(K)=0.00254$ 8; $\alpha(L)=0.00034$ 1                                                                                                                                                                        |
|                           |                   | 1365.185 7  | 19.63 5    | 604.7223 | 2 <sup>+</sup> | E2      |          | 0.00096      | $\alpha(K)=0.00082$ 3; $\alpha(L)=0.00010$                                                                                                                                                                          |
| 1986.35                   | 5 <sup>-</sup>    | 16          |            | 1969.921 | 4 <sup>+</sup> |         |          |              |                                                                                                                                                                                                                     |
|                           |                   | 585.5 3     | 100 12     | 1400.590 | 4 <sup>+</sup> | E1      |          | 0.00230      | $\alpha(K)=0.00197$ 6; $\alpha(L)=0.00024$ 1; B(E1)(W.u.)=2.2×10 <sup>-8</sup> 5                                                                                                                                    |
|                           |                   | 1382.0 3    | 12 4       | 604.7223 | 2 <sup>+</sup> | [E3]    |          | 0.00175      | $\alpha(K)=0.00148$ 5; $\alpha(L)=0.00020$ 1; B(E3)(W.u.)=0.24 9                                                                                                                                                    |
| 2029.242                  | 2 <sup>+</sup>    | 861.29 5    | 1.8 5      | 1167.968 | 2 <sup>+</sup> |         |          |              |                                                                                                                                                                                                                     |
|                           |                   | 1424.511 24 | 100.0 16   | 604.7223 | 2 <sup>+</sup> | M1+E2   | -0.31 5  | 0.00112 1    | $\alpha(K)=0.00096$ 1; $\alpha(L)=0.00012$ ; B(E2)(W.u.)=1.1 4;<br>B(M1)(W.u.)=0.036 4                                                                                                                              |
|                           |                   | 2029.19 4   | 20.9 4     | 0.0      | 0 <sup>+</sup> | E2      |          |              | B(E2)(W.u.)=0.43 5                                                                                                                                                                                                  |
| 2088.288                  | 2 <sup>+</sup>    | 920.352 23  | 13.1 4     | 1167.968 | 2 <sup>+</sup> | M1+E2   |          | 0.0026 5     | $\alpha(K)=0.0023$ 4; $\alpha(L)=0.00029$ 5<br>$\delta$ : +0.01 12 or +2.2 +12-7.<br>B(M1)(W.u.)=0.041 4, B(E2)(W.u.)<0.08 if $\delta$ =+0.01 12;<br>B(M1)(W.u.)=0.007 7, B(E2)(W.u.)=25 6 if $\delta$ =+2.2 +12-7. |
|                           |                   | 1483.52 3   | 100.0 21   | 604.7223 | 2 <sup>+</sup> | M1+E2   | +0.02 5  | 0.00105      | $\alpha(K)=0.00090$ ; $\alpha(L)=0.00011$ ; B(E2)(W.u.)=0.01 +5-10;<br>B(M1)(W.u.)=0.075 7<br>B(E2)(W.u.)=1.55 14                                                                                                   |
|                           |                   | 2088.26 4   | 39.9 10    | 0.0      | 0 <sup>+</sup> | E2      |          |              |                                                                                                                                                                                                                     |
| 2118.195                  | (4 <sup>+</sup> ) | 717.604 8   | 100.0 7    | 1400.590 | 4 <sup>+</sup> |         |          |              |                                                                                                                                                                                                                     |
|                           |                   | 950.21 3    | 19.6 7     | 1167.968 | 2 <sup>+</sup> |         |          |              |                                                                                                                                                                                                                     |
| 2159.683                  | (0 <sup>+</sup> ) | 991.73 4    | 1.8 4      | 1167.968 | 2 <sup>+</sup> | [E2]    |          | 0.00186      | $\alpha(K)=0.00158$ 5; $\alpha(L)=0.00021$ 1; B(E2)(W.u.)=2.5 +8-9                                                                                                                                                  |
|                           |                   | 1554.946 24 | 100.0 18   | 604.7223 | 2 <sup>+</sup> | E2      |          |              | B(E2)(W.u.)=14 +3-14                                                                                                                                                                                                |
|                           |                   | 2159.5#@ 5  | ≤0.11      | 0.0      | 0 <sup>+</sup> |         |          |              |                                                                                                                                                                                                                     |
| 2164.620                  | (4 <sup>+</sup> ) | 764.02 3    | 57.7 14    | 1400.590 | 4 <sup>+</sup> |         |          |              |                                                                                                                                                                                                                     |
|                           |                   | 996.649 12  | 100.0 14   | 1167.968 | 2 <sup>+</sup> |         |          |              |                                                                                                                                                                                                                     |

**Adopted Levels, Gammas (continued)**

$\gamma(^{134}\text{Ba})$  (continued)

| $E_i(\text{level})$ | $J_i^\pi$         | $E_\gamma$  | $I_\gamma$ | $E_f$    | $J_f^\pi$      | Mult.   | $\delta$ | $\alpha^\pm$ | Comments                                                                                                                                                                                                         |
|---------------------|-------------------|-------------|------------|----------|----------------|---------|----------|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2211.3              | (6 <sup>+</sup> ) | 810.7 3     | 100        | 1400.590 | 4 <sup>+</sup> | (E2)    |          | 0.00292      | $\alpha(\text{K})=0.00248$ 8; $\alpha(\text{L})=0.00033$ 1                                                                                                                                                       |
| 2244.99             |                   | 601.65 5    | 100        | 1643.336 | 3 <sup>+</sup> |         |          |              |                                                                                                                                                                                                                  |
| 2254.95             | 3 <sup>-</sup>    | 854.1 @ 3   | <48        | 1400.590 | 4 <sup>+</sup> |         |          |              |                                                                                                                                                                                                                  |
|                     |                   | 1087.8 3    | 19.5 8     | 1167.968 | 2 <sup>+</sup> | E1(+M2) | -0.08 7  | 0.00068 7    | $\alpha(\text{K})=0.00059$ 6                                                                                                                                                                                     |
|                     |                   | 1649.97 23  | 100.0 6    | 604.7223 | 2 <sup>+</sup> | E1(+M2) | -0.01 3  |              |                                                                                                                                                                                                                  |
| 2271.57             | 7 <sup>-</sup>    | 285.1 3     | 100        | 1986.35  | 5 <sup>-</sup> | [E2]    |          | 0.0534       | $\alpha(\text{K})=0.0433$ 13; $\alpha(\text{L})=0.00805$ 25; $\alpha(\text{M})=0.00169$ 5                                                                                                                        |
| 2279.87             | (2,3)             | 879.30 3    | 59.1 16    | 1400.590 | 4 <sup>+</sup> |         |          |              |                                                                                                                                                                                                                  |
|                     |                   | 1111.70 10  | 39.3 16    | 1167.968 | 2 <sup>+</sup> |         |          |              |                                                                                                                                                                                                                  |
|                     |                   | 1675.10 12  | 100.0 16   | 604.7223 | 2 <sup>+</sup> |         |          |              |                                                                                                                                                                                                                  |
| 2285.34             | (5) <sup>+</sup>  | 315.54 12   | 18.0 18    | 1969.921 | 4 <sup>+</sup> |         |          |              |                                                                                                                                                                                                                  |
|                     |                   | 642.01 5    | 100 4      | 1643.336 | 3 <sup>+</sup> | E2      |          | 0.00514      | $\alpha(\text{K})=0.00433$ 13; $\alpha(\text{L})=0.00061$ 2                                                                                                                                                      |
|                     |                   | 884.72 6    | 39.8 20    | 1400.590 | 4 <sup>+</sup> |         |          |              |                                                                                                                                                                                                                  |
| 2299.7              | (6 <sup>+</sup> ) | 899.1 3     | 100        | 1400.590 | 4 <sup>+</sup> |         |          |              |                                                                                                                                                                                                                  |
| 2311                | (1)               | 2311        |            | 0.0      | 0 <sup>+</sup> |         |          |              |                                                                                                                                                                                                                  |
| 2334.76             | 1,2 <sup>+</sup>  | 1730.05 7   | 100 7      | 604.7223 | 2 <sup>+</sup> |         |          |              |                                                                                                                                                                                                                  |
|                     |                   | 2334.71 9   | 12.5 14    | 0.0      | 0 <sup>+</sup> |         |          |              |                                                                                                                                                                                                                  |
| 2336.82             | 0 <sup>+</sup>    | 1168.63 8   | 8.4 11     | 1167.968 | 2 <sup>+</sup> | E2      |          | 0.00131      | $\alpha(\text{K})=0.00112$ 4; $\alpha(\text{L})=0.00014$ 1; B(E2)(W.u.)=5.1 +13-17                                                                                                                               |
|                     |                   | 1732.12 3   | 100 2      | 604.7223 | 2 <sup>+</sup> | E2      |          |              | B(E2)(W.u.)=8.5 +19-25                                                                                                                                                                                           |
|                     |                   | 2335 3      |            | 0.0      | 0 <sup>+</sup> | E0      |          |              |                                                                                                                                                                                                                  |
| 2371.02             | 2 <sup>+</sup>    | 728.2 5     | 7.8 6      | 1643.336 | 3 <sup>+</sup> |         |          |              |                                                                                                                                                                                                                  |
|                     |                   | 1766.28 7   | 100.0 11   | 604.7223 | 2 <sup>+</sup> | M1+E2   |          |              | $\delta$ : -0.80 +10-16 or -5.5 +9-14.<br>B(M1)(W.u.)=0.0044 21, B(E2)(W.u.)=0.6 3 if $\delta=-0.80$<br>+10-16; B(M1)(W.u.)=0.00023 13, B(E2)(W.u.)=1.4 4 if<br>$\delta=-5.5$ +9-14.<br>B(E2)(W.u.)=0.043 +12-20 |
| 2377.1              | (6)               | 2371.0 5    | 12.9 9     | 0.0      | 0 <sup>+</sup> | E2      |          |              |                                                                                                                                                                                                                  |
| 2379.112            | 0 <sup>+</sup>    | 390.7 3     | 100        | 1986.35  | 5 <sup>-</sup> |         |          |              |                                                                                                                                                                                                                  |
|                     |                   | 1211.154 22 | 100 2      | 1167.968 | 2 <sup>+</sup> | E2      |          | 0.00122      | $\alpha(\text{K})=0.00104$ 4; $\alpha(\text{L})=0.00013$                                                                                                                                                         |
|                     |                   | 1774.35 3   | 40.5 13    | 604.7223 | 2 <sup>+</sup> | E2      |          |              |                                                                                                                                                                                                                  |
|                     |                   | 2379.6 15   |            | 0.0      | 0 <sup>+</sup> | E0      |          |              |                                                                                                                                                                                                                  |
| 2464.28             | (2 <sup>+</sup> ) | 1859.58 6   | 100.2 9    | 604.7223 | 2 <sup>+</sup> | (M1+E2) |          |              | $\delta$ : +0.18 +11-7 or +1.5 3.                                                                                                                                                                                |
|                     |                   | 2464.15 10  | 16.2 9     | 0.0      | 0 <sup>+</sup> | (E2)    |          |              |                                                                                                                                                                                                                  |
| 2469.58             | (5) <sup>+</sup>  | 826.28 6    | 100 5      | 1643.336 | 3 <sup>+</sup> | E2      |          | 0.00279      | $\alpha(\text{K})=0.00237$ 8; $\alpha(\text{L})=0.00032$ 1                                                                                                                                                       |
|                     |                   | 1068.76 16  | 33.8 23    | 1400.590 | 4 <sup>+</sup> |         |          |              |                                                                                                                                                                                                                  |
| 2480.34             | (2,3)             | 1875.60 5   | 100        | 604.7223 | 2 <sup>+</sup> |         |          |              |                                                                                                                                                                                                                  |
| 2488.434            | 0 <sup>+</sup>    | 843.91 5    | 100 10     | 1643.336 | 3 <sup>+</sup> |         |          |              | $E_\gamma$ : seen only in (n,n' $\gamma$ ).                                                                                                                                                                      |
|                     |                   | 1320.707 23 | 69 3       | 1167.968 | 2 <sup>+</sup> | E2      |          | 0.00102      | $\alpha(\text{K})=0.00087$ 3; $\alpha(\text{L})=0.00011$ ; B(E2)(W.u.)=11 +4-11                                                                                                                                  |
|                     |                   | 1883.74 12  | 2.8 2      | 604.7223 | 2 <sup>+</sup> |         |          |              |                                                                                                                                                                                                                  |
|                     |                   | 2487.0 15   |            | 0.0      | 0 <sup>+</sup> | E0      |          |              |                                                                                                                                                                                                                  |
| 2506.26             | (4 <sup>+</sup> ) | 1105.68 4   | 100 3      | 1400.590 | 4 <sup>+</sup> | (M1+E2) |          | 0.0017 3     | $\alpha(\text{K})=0.00149$ 24; $\alpha(\text{L})=0.00019$ 3                                                                                                                                                      |
|                     |                   | 1901.2 2    | 54 3       | 604.7223 | 2 <sup>+</sup> |         |          |              | $\delta$ : -0.21 11 or +1.5 5.                                                                                                                                                                                   |

Adopted Levels, Gammas (continued)

| $E_i(\text{level})$ | $J_i^\pi$                           | $E_\gamma$               | $I_\gamma$ | $E_f$    | $J_f^\pi$      | $\gamma(^{134}\text{Ba})$ (continued) |          |                     | Comments                                                    |
|---------------------|-------------------------------------|--------------------------|------------|----------|----------------|---------------------------------------|----------|---------------------|-------------------------------------------------------------|
|                     |                                     |                          |            |          |                | Mult.                                 | $\delta$ | $\alpha^{\ddagger}$ |                                                             |
| 2531.31             | (5 <sup>-</sup> to 7 <sup>-</sup> ) | 259.70 12                | 48 7       | 2271.57  | 7 <sup>-</sup> |                                       |          |                     |                                                             |
|                     |                                     | 544.97 7                 | 100 5      | 1986.35  | 5 <sup>-</sup> |                                       |          |                     |                                                             |
| 2536.91             | 0 to 2                              | 1368.96 7                | 79 6       | 1167.968 | 2 <sup>+</sup> |                                       |          |                     |                                                             |
|                     |                                     | 1932.16 6                | 100 8      | 604.7223 | 2 <sup>+</sup> |                                       |          |                     |                                                             |
| 2564.712            | 1 <sup>+</sup> , 2 <sup>+</sup>     | 1396.730 22              | 37.4 11    | 1167.968 | 2 <sup>+</sup> | M1,E2                                 |          | 0.00105 14          | $\alpha(\text{K})=0.00090$ 12; $\alpha(\text{L})=0.00011$ 2 |
|                     |                                     | 1959.95 4                | 100 2      | 604.7223 | 2 <sup>+</sup> | M1,E2                                 |          |                     |                                                             |
|                     |                                     | 2564.84 7                | 5.6 4      | 0.0      | 0 <sup>+</sup> |                                       |          |                     |                                                             |
| 2570.87             | 1 <sup>(+)</sup>                    | 1402.89 4                | 58.2 23    | 1167.968 | 2 <sup>+</sup> |                                       |          |                     |                                                             |
|                     |                                     | 1966.09 11               | 20 3       | 604.7223 | 2 <sup>+</sup> |                                       |          |                     |                                                             |
|                     |                                     | 2570.85 5                | 100 3      | 0.0      | 0 <sup>+</sup> |                                       |          |                     |                                                             |
| 2574.31             | (2 <sup>+</sup> )                   | 544.7 3                  | 49 6       | 2029.242 | 2 <sup>+</sup> |                                       |          |                     |                                                             |
|                     |                                     | 1406.4 5                 | 67 6       | 1167.968 | 2 <sup>+</sup> |                                       |          |                     |                                                             |
|                     |                                     | 1969.65 11               | 85 6       | 604.7223 | 2 <sup>+</sup> |                                       |          |                     |                                                             |
|                     |                                     | 2573.7 5                 | 100 9      | 0.0      | 0 <sup>+</sup> | (E2)                                  |          |                     |                                                             |
| 2599.88             | 2 <sup>+</sup>                      | 1431.35 <sup>#@</sup> 13 | 2.5 5      | 1167.968 | 2 <sup>+</sup> |                                       |          |                     |                                                             |
|                     |                                     | 1995.14 4                | 100 2      | 604.7223 | 2 <sup>+</sup> | M1+E2                                 |          |                     | $\delta$ : -0.17 +9-7 or +4.1 +16-10.                       |
|                     |                                     | 2599.84 6                | 3.4 5      | 0.0      | 0 <sup>+</sup> |                                       |          |                     |                                                             |
| 2656.23             | (2 <sup>+</sup> )                   | 1255.1 <sup>@</sup> 3    | 23 3       | 1400.590 | 4 <sup>+</sup> |                                       |          |                     |                                                             |
|                     |                                     | 1488.3 3                 | 60 15      | 1167.968 | 2 <sup>+</sup> |                                       |          |                     |                                                             |
|                     |                                     | 2051.51 9                | 100 9      | 604.7223 | 2 <sup>+</sup> | (M1+E2)                               | -0.4 3   |                     |                                                             |
|                     |                                     | 2656.11 18               | 7.4 10     | 0.0      | 0 <sup>+</sup> |                                       |          |                     |                                                             |
| 2661.88             | 3 to 5                              | 1018.54 5                | 100        | 1643.336 | 3 <sup>+</sup> |                                       |          |                     |                                                             |
| 2677.76             | 3,4                                 | 648.4 3                  | 12 2       | 2029.242 | 2 <sup>+</sup> |                                       |          |                     |                                                             |
|                     |                                     | 2073.02 8                | 100 2      | 604.7223 | 2 <sup>+</sup> |                                       |          |                     |                                                             |
| 2696.58             | 1,2                                 | 1528.54 7                | 26.9 21    | 1167.968 | 2 <sup>+</sup> |                                       |          |                     |                                                             |
|                     |                                     | 2091.98 9                | 100 4      | 604.7223 | 2 <sup>+</sup> |                                       |          |                     |                                                             |
|                     |                                     | 2696.52 7                | 31.1 16    | 0.0      | 0 <sup>+</sup> |                                       |          |                     |                                                             |
| 2729.23             | 1,2 <sup>+</sup>                    | 1561.4 4                 | 4.1 5      | 1167.968 | 2 <sup>+</sup> |                                       |          |                     |                                                             |
|                     |                                     | 2124.49 4                | 100 2      | 604.7223 | 2 <sup>+</sup> |                                       |          |                     |                                                             |
|                     |                                     | 2729 <sup>@</sup>        | <10        | 0.0      | 0 <sup>+</sup> |                                       |          |                     |                                                             |
| 2747.965            | 2 <sup>+</sup>                      | 659.85 9                 | 16.2 16    | 2088.288 | 2 <sup>+</sup> |                                       |          |                     |                                                             |
|                     |                                     | 718.71 3                 | 76 5       | 2029.242 | 2 <sup>+</sup> |                                       |          |                     |                                                             |
|                     |                                     | 1104.5 5                 | 17 4       | 1643.336 | 3 <sup>+</sup> |                                       |          |                     |                                                             |
|                     |                                     | 1347.34 5                | 31.8 20    | 1400.590 | 4 <sup>+</sup> |                                       |          |                     |                                                             |
|                     |                                     | 1579.92 15               | 38 4       | 1167.968 | 2 <sup>+</sup> |                                       |          |                     |                                                             |
|                     |                                     | 2143.24 5                | 100 3      | 604.7223 | 2 <sup>+</sup> | M1+E2                                 |          |                     | $\delta$ : +0.4 +14-2 or +1.1 +5-9.                         |
|                     |                                     | 2748.1 5                 | 0.105 22   | 0.0      | 0 <sup>+</sup> |                                       |          |                     |                                                             |
| 2758.9?             | 1,2 <sup>+</sup>                    | 1591.1 <sup>@</sup> 11   | 100 30     | 1167.968 | 2 <sup>+</sup> |                                       |          |                     |                                                             |
|                     |                                     | 2758.9 3                 | 46 3       | 0.0      | 0 <sup>+</sup> |                                       |          |                     |                                                             |
| 2760.74             | 1,2                                 | 2156.00 12               | 100        | 604.7223 | 2 <sup>+</sup> |                                       |          |                     |                                                             |

**Adopted Levels, Gammas (continued)**

$\gamma(^{134}\text{Ba})$  (continued)

| E <sub>i</sub> (level) | J <sup>π</sup> <sub>i</sub>    | E <sub>γ</sub>           | I <sub>γ</sub>    | E <sub>f</sub> | J <sup>π</sup> <sub>f</sub> | Mult. | α <sup>‡</sup> | Comments                                                         |
|------------------------|--------------------------------|--------------------------|-------------------|----------------|-----------------------------|-------|----------------|------------------------------------------------------------------|
| 2773.73                | 3,4                            | 744.73 15                | 61 5              | 2029.242       | 2 <sup>+</sup>              |       |                |                                                                  |
|                        |                                | 1373.2 10                | 20 5              | 1400.590       | 4 <sup>+</sup>              |       |                |                                                                  |
|                        |                                | 2168.99 10               | 100               | 604.7223       | 2 <sup>+</sup>              |       |                |                                                                  |
| 2779.9                 |                                | 810                      | 100               | 1969.921       | 4 <sup>+</sup>              |       |                |                                                                  |
| 2806                   | (1)                            | 2806                     |                   | 0.0            | 0 <sup>+</sup>              |       |                |                                                                  |
| 2823.72                | 1 <sup>-</sup>                 | 2823.69 11               |                   | 0.0            | 0 <sup>+</sup>              | E1    |                |                                                                  |
| 2828.50                | 1 <sup>+</sup> ,2 <sup>+</sup> | 1184.92 12               | 9.8 12            | 1643.336       | 3 <sup>+</sup>              |       |                |                                                                  |
|                        |                                | 1660.57 <sup>#</sup> 7   | 16.2 14           | 1167.968       | 2 <sup>+</sup>              |       |                |                                                                  |
|                        |                                | 2223.77 4                | 100 3             | 604.7223       | 2 <sup>+</sup>              | M1,E2 |                |                                                                  |
|                        |                                | 2828.1 3                 | 0.20 6            | 0.0            | 0 <sup>+</sup>              |       |                |                                                                  |
| 2835.9                 | (8 <sup>+</sup> )              | 536                      |                   | 2299.7         | (6 <sup>+</sup> )           |       |                |                                                                  |
|                        |                                | 565                      |                   | 2271.57        | 7 <sup>-</sup>              |       |                |                                                                  |
|                        |                                | 624.5 3                  |                   | 2211.3         | (6 <sup>+</sup> )           | (E2)  | 0.00552        | α(K)=0.00464 14; α(L)=0.00066 2                                  |
| 2851.26                | 2 <sup>+</sup>                 | 1683.33 7                | 100 7             | 1167.968       | 2 <sup>+</sup>              |       |                | E <sub>γ</sub> : Not seen in (n,n'γ).                            |
|                        |                                | 2246.7 4                 | 18 4              | 604.7223       | 2 <sup>+</sup>              |       |                |                                                                  |
|                        |                                | 2851.05 12               | 35.5 17           | 0.0            | 0 <sup>+</sup>              | E2    |                |                                                                  |
| 2876.89                | 3 to 5                         | 1233.55 10               | 100               | 1643.336       | 3 <sup>+</sup>              |       |                |                                                                  |
| 2887.04                | 1,2                            | 1243.84 <sup>#</sup> 21  | 26 5              | 1643.336       | 3 <sup>+</sup>              |       |                |                                                                  |
|                        |                                | 1719.05 6                | 77 5              | 1167.968       | 2 <sup>+</sup>              |       |                |                                                                  |
|                        |                                | 2282.30 5                | 100 4             | 604.7223       | 2 <sup>+</sup>              |       |                |                                                                  |
| 2913.1                 |                                | 641.5 3                  | 100               | 2271.57        | 7 <sup>-</sup>              |       |                |                                                                  |
| 2917.61                | 2                              | 1517.09 15               | 79 22             | 1400.590       | 4 <sup>+</sup>              |       |                |                                                                  |
|                        |                                | 1749.41 13               | 64 8              | 1167.968       | 2 <sup>+</sup>              |       |                |                                                                  |
|                        |                                | 2312.91 7                | 100 6             | 604.7223       | 2 <sup>+</sup>              |       |                |                                                                  |
| 2925.99                | 3 to 5                         | 1282.65 15               | 100               | 1643.336       | 3 <sup>+</sup>              |       |                |                                                                  |
| 2938.93                | 1 <sup>+</sup>                 | 1771                     | 33 <sup>‡</sup> 7 | 1167.968       | 2 <sup>+</sup>              |       |                | E <sub>γ</sub> : Seen only in ε decay.                           |
|                        |                                | 2334.7 <sup>@</sup> 4    | 26 <sup>‡</sup> 5 | 604.7223       | 2 <sup>+</sup>              |       |                |                                                                  |
|                        |                                | 2938.9 2                 | 100 <sup>‡</sup>  | 0.0            | 0 <sup>+</sup>              | M1    |                |                                                                  |
| 2943.90                | 2 to 4                         | 2339.16 14               | 100               | 604.7223       | 2 <sup>+</sup>              |       |                |                                                                  |
| 2950.56                | 3,4                            | 1307.6 4                 | 52 8              | 1643.336       | 3 <sup>+</sup>              |       |                |                                                                  |
|                        |                                | 2345.6 3                 | 100 8             | 604.7223       | 2 <sup>+</sup>              |       |                |                                                                  |
| 2957.2                 | (10 <sup>+</sup> )             | 121.3 3                  | 100               | 2835.9         | (8 <sup>+</sup> )           | E2    | 0.98           | α(K)=0.673 21; α(L)=0.243 8; α(M)=0.0524 16; B(E2)(W.u.)=0.102 6 |
| 3004.41                | 1,2 <sup>+</sup>               | 1243.84 <sup>#@</sup> 21 | <130              | 1760.555       | 0 <sup>+</sup>              |       |                |                                                                  |
|                        |                                | 1836.43 15               | 100               | 1167.968       | 2 <sup>+</sup>              |       |                |                                                                  |
| 3011                   | (1)                            | 3011                     |                   | 0.0            | 0 <sup>+</sup>              |       |                |                                                                  |
| 3011.7                 |                                | 712                      | 100               | 2299.7         | (6 <sup>+</sup> )           |       |                |                                                                  |
| 3027.38                | (1 <sup>+</sup> )              | 1859.43 <sup>@</sup> 6   |                   | 1167.968       | 2 <sup>+</sup>              |       |                | E <sub>γ</sub> : γ not observed in (γ,γ') experiment.            |
|                        |                                | 2422.4 6                 | 46 6              | 604.7223       | 2 <sup>+</sup>              |       |                |                                                                  |
|                        |                                | 3027.11 18               | 100 7             | 0.0            | 0 <sup>+</sup>              |       |                |                                                                  |
| 3061.29                | 2 <sup>(+)</sup>               | 1660.57 <sup>#@</sup> 7  | <120              | 1400.590       | 4 <sup>+</sup>              |       |                |                                                                  |

**Adopted Levels, Gammas (continued)**

$\gamma(^{134}\text{Ba})$  (continued)

| $E_i(\text{level})$ | $J_i^\pi$                      | $E_\gamma$              | $I_\gamma$ | $E_f$    | $J_f^\pi$         | Mult. | $\alpha^\pm$ | Comments                                                      |
|---------------------|--------------------------------|-------------------------|------------|----------|-------------------|-------|--------------|---------------------------------------------------------------|
| 3061.29             | 2 <sup>(+)</sup>               | 1893.35 9               | 100 7      | 1167.968 | 2 <sup>+</sup>    |       |              |                                                               |
|                     |                                | 2456.2 5                | 6.2 21     | 604.7223 | 2 <sup>+</sup>    |       |              |                                                               |
|                     |                                | 3061.23 8               | 22.7 21    | 0.0      | 0 <sup>+</sup>    |       |              |                                                               |
| 3068.85?            | 1,2 <sup>+</sup>               | 1307.0 7                | 100 50     | 1760.555 | 0 <sup>+</sup>    |       |              |                                                               |
|                     |                                | 2464.15 13              | 83 15      | 604.7223 | 2 <sup>+</sup>    |       |              |                                                               |
| 3074.72?            | (2)                            | 1431.35 <sup>#</sup> 13 | 100 20     | 1643.336 | 3 <sup>+</sup>    |       |              |                                                               |
|                     |                                | 1674.6 5                | 27 11      | 1400.590 | 4 <sup>+</sup>    |       |              |                                                               |
| 3086.65             | 1 <sup>+</sup> ,2 <sup>+</sup> | 1443.1 2                | 100 8      | 1643.336 | 3 <sup>+</sup>    |       |              |                                                               |
|                     |                                | 1917.8 4                | 86 10      | 1167.968 | 2 <sup>+</sup>    |       |              |                                                               |
|                     |                                | 2482.24 17              | 62 19      | 604.7223 | 2 <sup>+</sup>    |       |              |                                                               |
|                     |                                | 3086.59 15              | 36 6       | 0.0      | 0 <sup>+</sup>    |       |              |                                                               |
| 3160.07             | 1,2 <sup>+</sup>               | 1992.1 2                | 100 8      | 1167.968 | 2 <sup>+</sup>    |       |              |                                                               |
|                     |                                | 3159.9 6                | 34 5       | 0.0      | 0 <sup>+</sup>    |       |              |                                                               |
| 3216.3?             | 1,2 <sup>+</sup>               | 2612.3 9                | 13 6       | 604.7223 | 2 <sup>+</sup>    |       |              |                                                               |
|                     |                                | 3215.7 8                | 100 40     | 0.0      | 0 <sup>+</sup>    |       |              |                                                               |
| 3240.5              | (9 <sup>-</sup> )              | 328 <sup>@</sup>        |            | 2913.1   |                   |       |              |                                                               |
|                     |                                | 968.9 3                 | 100        | 2271.57  | 7 <sup>-</sup>    | (E2)  | 0.00195      | $\alpha(\text{K})=0.00166\ 5$ ; $\alpha(\text{L})=0.00022\ 1$ |
| 3242.3              |                                | 865                     |            | 2377.1   | (6)               |       |              |                                                               |
|                     |                                | 971                     |            | 2271.57  | 7 <sup>-</sup>    |       |              |                                                               |
| 3245.88             | (1 <sup>+</sup> )              | 3245.84 19              | 100        | 0.0      | 0 <sup>+</sup>    |       |              |                                                               |
| 3262.0              | 2 to 4                         | 2657.2 3                | 100        | 604.7223 | 2 <sup>+</sup>    |       |              |                                                               |
| 3272.10             | 1 <sup>-</sup> ,2 <sup>-</sup> | 1017.3 2                | 17 8       | 2254.95  | 3 <sup>-</sup>    |       |              |                                                               |
|                     |                                | 2104.09 6               | 100 7      | 1167.968 | 2 <sup>+</sup>    |       |              |                                                               |
|                     |                                | 2667.37 9               | 34.9 23    | 604.7223 | 2 <sup>+</sup>    |       |              |                                                               |
| 3311.3              |                                | 934                     |            | 2377.1   | (6)               |       |              |                                                               |
|                     |                                | 1040                    |            | 2271.57  | 7 <sup>-</sup>    |       |              |                                                               |
| 3314.56             | 2,3                            | 1913.8 2                |            | 1400.590 | 4 <sup>+</sup>    |       |              |                                                               |
|                     |                                | 2710.4 4                | 100        | 604.7223 | 2 <sup>+</sup>    |       |              |                                                               |
| 3327.25             | (1 <sup>+</sup> )              | 2159.5 <sup>#</sup> 5   | ≤90        | 1167.968 | 2 <sup>+</sup>    |       |              |                                                               |
|                     |                                | 2722.5 3                | 77 9       | 604.7223 | 2 <sup>+</sup>    |       |              |                                                               |
|                     |                                | 3327.18 15              | 100 20     | 0.0      | 0 <sup>+</sup>    |       |              |                                                               |
| 3328.3              |                                | 1117                    | 100        | 2211.3   | (6 <sup>+</sup> ) |       |              |                                                               |
| 3343                | (1)                            | 3343                    |            | 0.0      | 0 <sup>+</sup>    |       |              |                                                               |
| 3368.97             | 1,2                            | 1114.3 6                | 100 23     | 2254.95  | 3 <sup>-</sup>    |       |              |                                                               |
|                     |                                | 2764.22 6               | 60.0 25    | 604.7223 | 2 <sup>+</sup>    |       |              |                                                               |
|                     |                                | 3368.8 6                | 1.5 5      | 0.0      | 0 <sup>+</sup>    |       |              |                                                               |
| 3371.79             | 2 to 4                         | 2203.8 2                | 100        | 1167.968 | 2 <sup>+</sup>    |       |              |                                                               |
| 3408.72             | 1,2                            | 1765.71 22              | 100 17     | 1643.336 | 3 <sup>+</sup>    |       |              |                                                               |
|                     |                                | 2240.4 6                | 24 8       | 1167.968 | 2 <sup>+</sup>    |       |              |                                                               |
|                     |                                | 2803.5 3                | 12.9 15    | 604.7223 | 2 <sup>+</sup>    |       |              |                                                               |
|                     |                                | 3408.1 8                | 14 7       | 0.0      | 0 <sup>+</sup>    |       |              |                                                               |

**Adopted Levels, Gammas (continued)**

$\gamma(^{134}\text{Ba})$  (continued)

| <u>E<sub>i</sub>(level)</u> | <u>J<sub>i</sub><sup><math>\pi</math></sup></u> | <u>E<sub><math>\gamma</math></sub></u> | <u>I<sub><math>\gamma</math></sub></u> | <u>E<sub>f</sub></u> | <u>J<sub>f</sub><sup><math>\pi</math></sup></u> | <u>Mult.</u> | <u>E<sub>i</sub>(level)</u> | <u>J<sub>i</sub><sup><math>\pi</math></sup></u> | <u>E<sub><math>\gamma</math></sub></u> | <u>I<sub><math>\gamma</math></sub></u> | <u>E<sub>f</sub></u> | <u>J<sub>f</sub><sup><math>\pi</math></sup></u> | <u>Mult.</u> |
|-----------------------------|-------------------------------------------------|----------------------------------------|----------------------------------------|----------------------|-------------------------------------------------|--------------|-----------------------------|-------------------------------------------------|----------------------------------------|----------------------------------------|----------------------|-------------------------------------------------|--------------|
| 3432.15?                    | 1,2 <sup>+</sup>                                | 2827.4 1                               | 100 25                                 | 604.7223             | 2 <sup>+</sup>                                  |              | 3652.1?                     | 1,2 <sup>+</sup>                                | 3652.0 10                              | 13 10                                  | 0.0                  | 0 <sup>+</sup>                                  |              |
|                             |                                                 | 3432.1 7                               | 10.0 25                                | 0.0                  | 0 <sup>+</sup>                                  |              | 3684.2                      | 2 <sup>+</sup>                                  | 3684.1 4                               | 100                                    | 0.0                  | 0 <sup>+</sup>                                  | E2           |
| 3443.39                     | 2 to 4                                          | 2275.4 2                               | 100                                    | 1167.968             | 2 <sup>+</sup>                                  |              | 3705                        | 1                                               | 3705                                   |                                        | 0.0                  | 0 <sup>+</sup>                                  | D            |
| 3450.27                     | (1 <sup>+</sup> )                               | 2845.6 5                               | 19 10                                  | 604.7223             | 2 <sup>+</sup>                                  |              | 3783                        | (1)                                             | 3783                                   |                                        | 0.0                  | 0 <sup>+</sup>                                  |              |
|                             |                                                 | 3450.22 8                              | 100 15                                 | 0.0                  | 0 <sup>+</sup>                                  |              | 3836                        | 1                                               | 3836                                   |                                        | 0.0                  | 0 <sup>+</sup>                                  | D            |
| 3451.0                      | 1,2 <sup>+</sup>                                | 2283.0 4                               | 100 10                                 | 1167.968             | 2 <sup>+</sup>                                  |              | 3853.8                      | 2 <sup>+</sup>                                  | 3853.7 4                               | 100                                    | 0.0                  | 0 <sup>+</sup>                                  | E2           |
|                             |                                                 | 3451.4 11                              | 52 10                                  | 0.0                  | 0 <sup>+</sup>                                  |              | 3899.1                      |                                                 | 986                                    | 100                                    | 2913.1               |                                                 |              |
| 3459.3                      |                                                 | 217                                    | 100                                    | 3242.3               |                                                 |              | 3954.3                      |                                                 | 495                                    |                                        | 3459.3               |                                                 |              |
| 3471.1?                     | 2 <sup>+</sup>                                  | 2866.4 3                               | 100 14                                 | 604.7223             | 2 <sup>+</sup>                                  |              |                             |                                                 | 712                                    |                                        | 3242.3               |                                                 |              |
|                             |                                                 | 3471.0 5                               | 4.4 23                                 | 0.0                  | 0 <sup>+</sup>                                  |              | 3980                        | (1)                                             | 3980                                   |                                        | 0.0                  | 0 <sup>+</sup>                                  |              |
| 3499.68                     | (1,2)                                           | 2894.92 14                             | 100                                    | 604.7223             | 2 <sup>+</sup>                                  |              | 3992                        | (1)                                             | 3992                                   |                                        | 0.0                  | 0 <sup>+</sup>                                  |              |
| 3504.2                      |                                                 | 547                                    | 100                                    | 2957.2               | (10 <sup>+</sup> )                              |              | 4001.4                      |                                                 | 760.9 3                                | 100                                    | 3240.5               | (9 <sup>-</sup> )                               |              |
| 3548.5                      | 1,2 <sup>+</sup>                                | 2943.3 8                               | 100 22                                 | 604.7223             | 2 <sup>+</sup>                                  |              | 4083.5                      |                                                 | 843                                    | 100                                    | 3240.5               | (9 <sup>-</sup> )                               |              |
|                             |                                                 | 3548.5 4                               | 43 8                                   | 0.0                  | 0 <sup>+</sup>                                  |              | 4517.4                      |                                                 | 516                                    | 100                                    | 4001.4               |                                                 |              |
| 3560                        | 1                                               | 3560                                   |                                        | 0.0                  | 0 <sup>+</sup>                                  | D            | 4549.9                      |                                                 | 914                                    | 100                                    | 3635.9               |                                                 |              |
| 3589                        | 1                                               | 3589                                   |                                        | 0.0                  | 0 <sup>+</sup>                                  | D            | 4635.2                      |                                                 | 1131                                   | 100                                    | 3504.2               |                                                 |              |
| 3599.3                      |                                                 | 357                                    | 100                                    | 3242.3               |                                                 |              | 5001.4                      |                                                 | 484                                    | 100                                    | 4517.4               |                                                 |              |
| 3617                        | (1)                                             | 3617                                   |                                        | 0.0                  | 0 <sup>+</sup>                                  |              | 5015.4                      |                                                 | 498                                    | 100                                    | 4517.4               |                                                 |              |
| 3635.9                      |                                                 | 800                                    | 100                                    | 2835.9               | (8 <sup>+</sup> )                               |              | 5230.9                      |                                                 | 681                                    | 100                                    | 4549.9               |                                                 |              |
| 3652.1?                     | 1,2 <sup>+</sup>                                | 3047.4 5                               | 100 50                                 | 604.7223             | 2 <sup>+</sup>                                  |              |                             |                                                 |                                        |                                        |                      |                                                 |              |

<sup>†</sup> From <sup>134</sup>Ba( $\gamma,\gamma'$ ).

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

# Multiply placed.

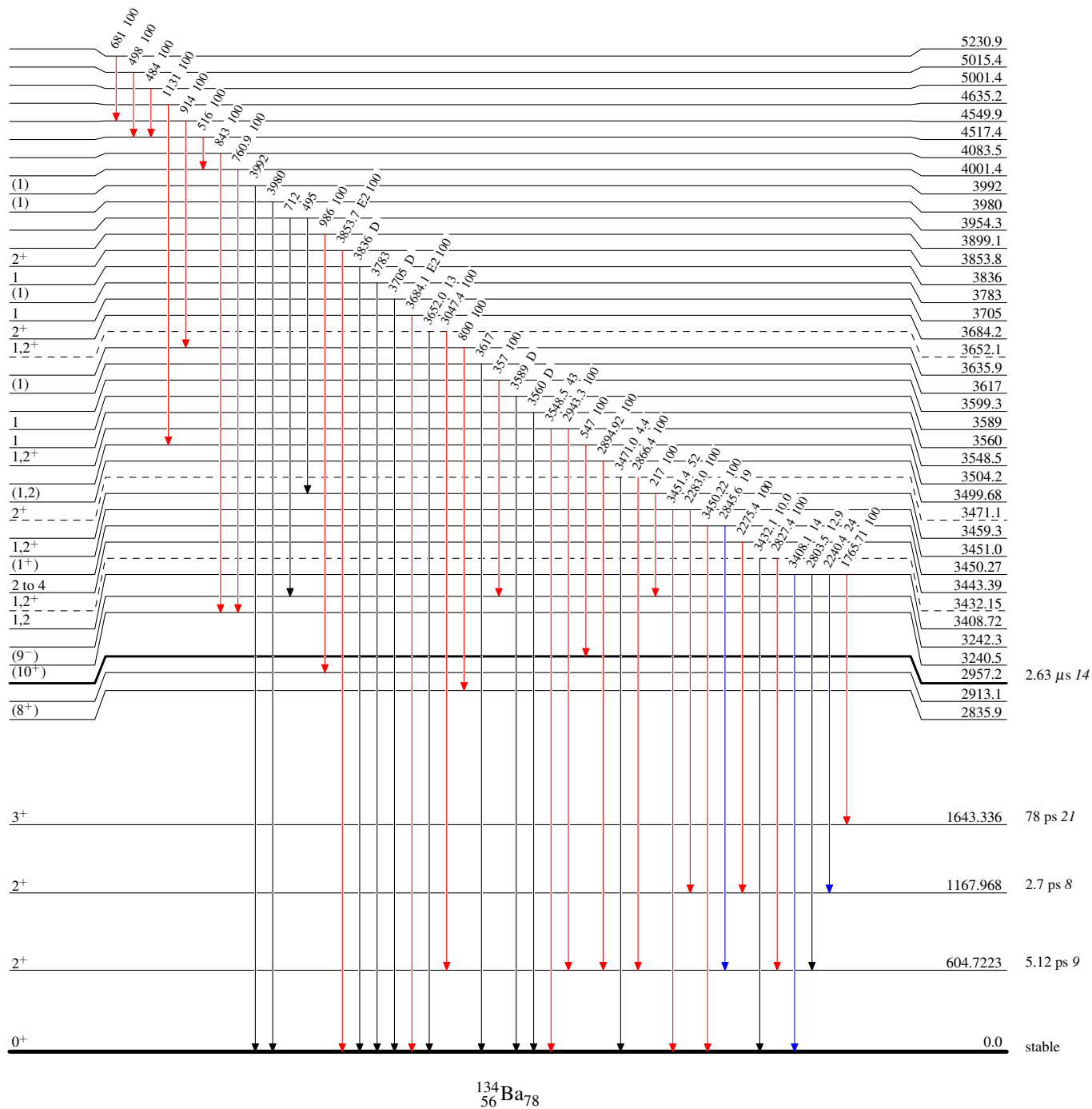
@ Placement of transition in the level scheme is uncertain.

**Adopted Levels, Gammas****Level Scheme**

Intensities: Type not specified

**Legend**

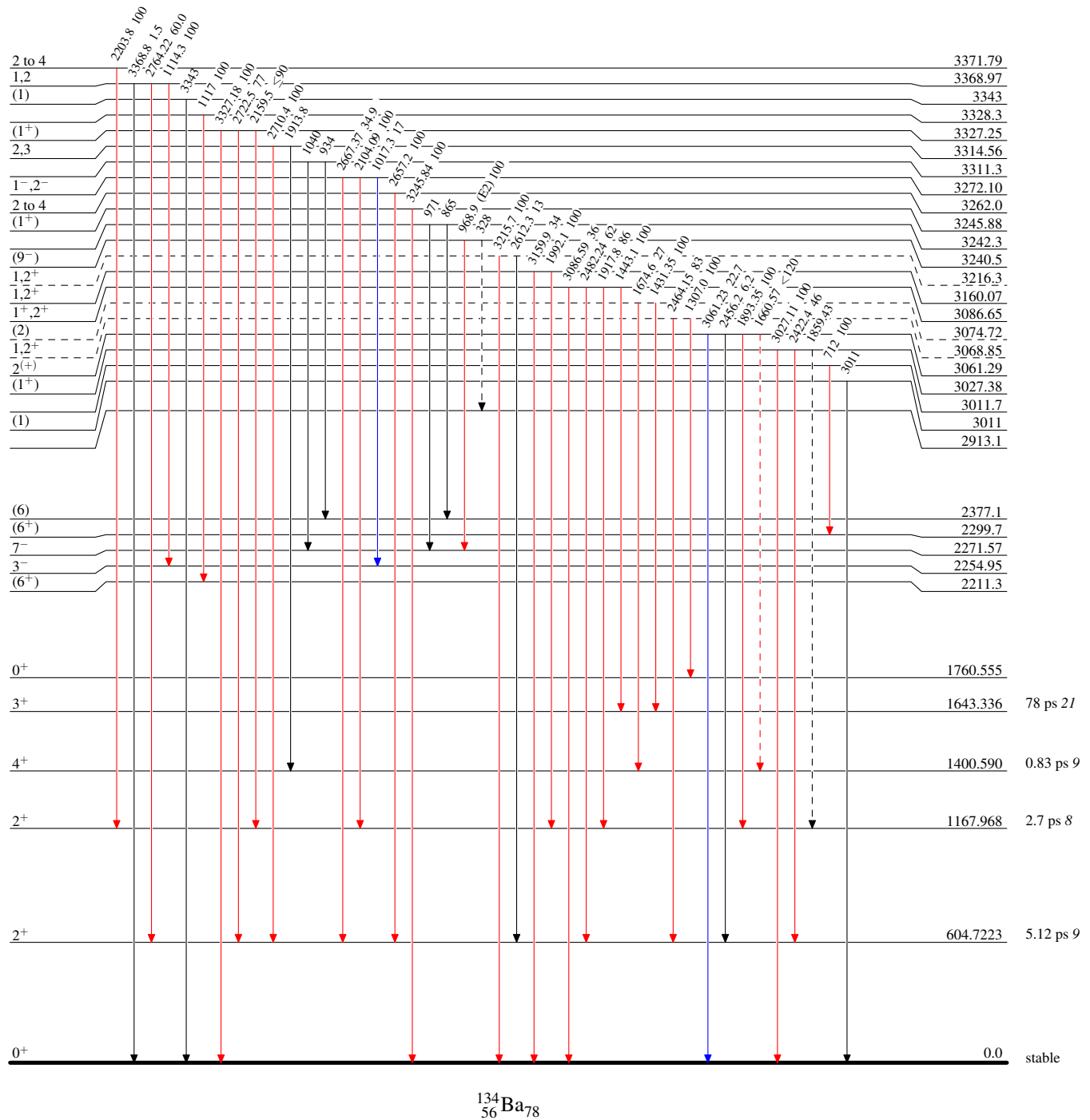
- $I_\gamma < 2\% \times I_\gamma^{\max}$   
 —→  $I_\gamma < 10\% \times I_\gamma^{\max}$   
 —→  $I_\gamma > 10\% \times I_\gamma^{\max}$



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

Intensities: Type not specified

- $I_\gamma < 2\% \times I_\gamma^{\max}$   
 —————→  $I_\gamma < 10\% \times I_\gamma^{\max}$   
 —————→  $I_\gamma > 10\% \times I_\gamma^{\max}$   
 - - - - -→  $\gamma$  Decay (Uncertain)



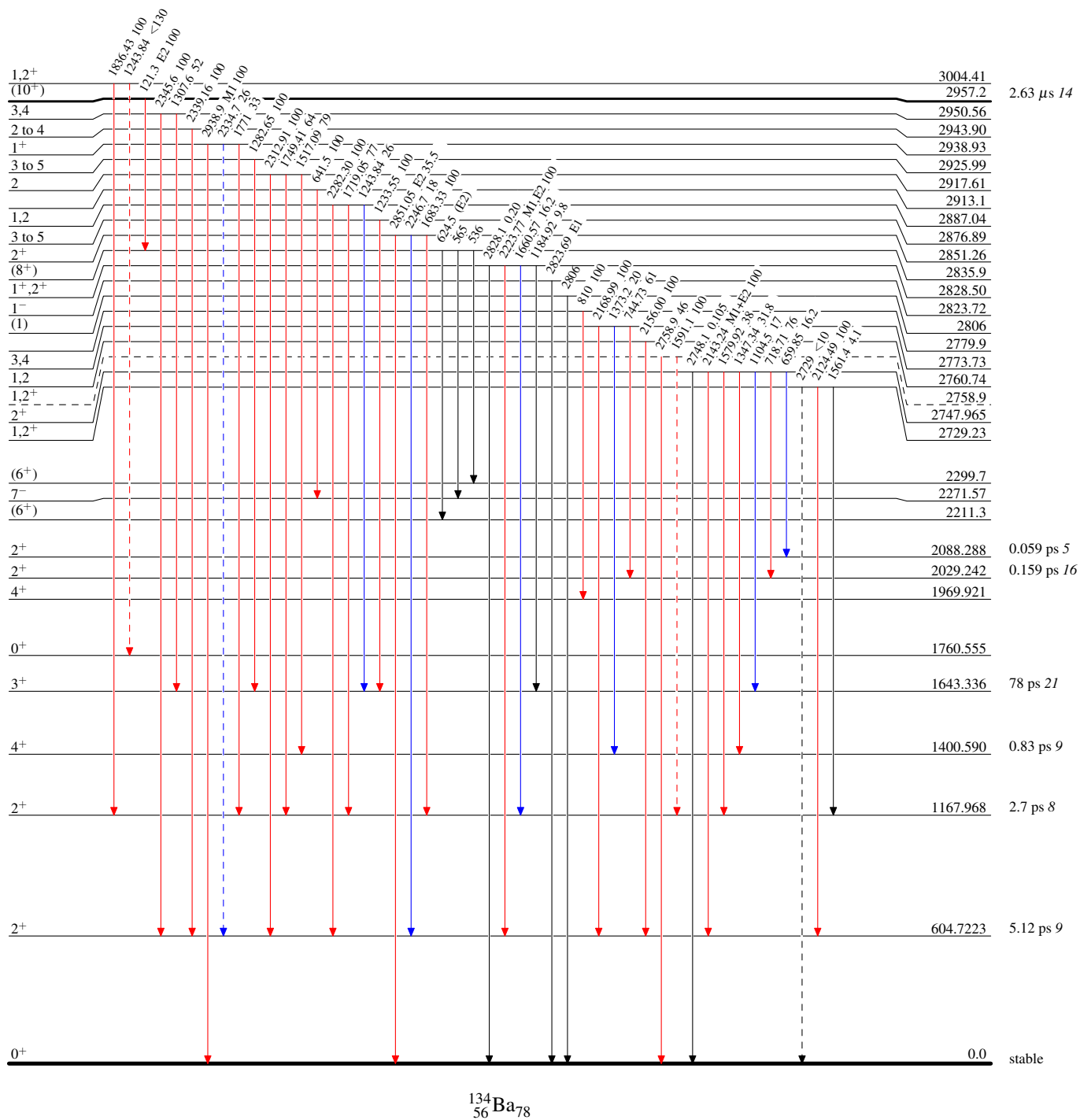
**Adopted Levels, Gammas**

## Legend

## Level Scheme (continued)

Intensities: Type not specified

- $I_\gamma < 2\% \times I_\gamma^{\max}$   
 —→  $I_\gamma < 10\% \times I_\gamma^{\max}$   
 —→  $I_\gamma > 10\% \times I_\gamma^{\max}$   
 - - - - -→  $\gamma$  Decay (Uncertain)



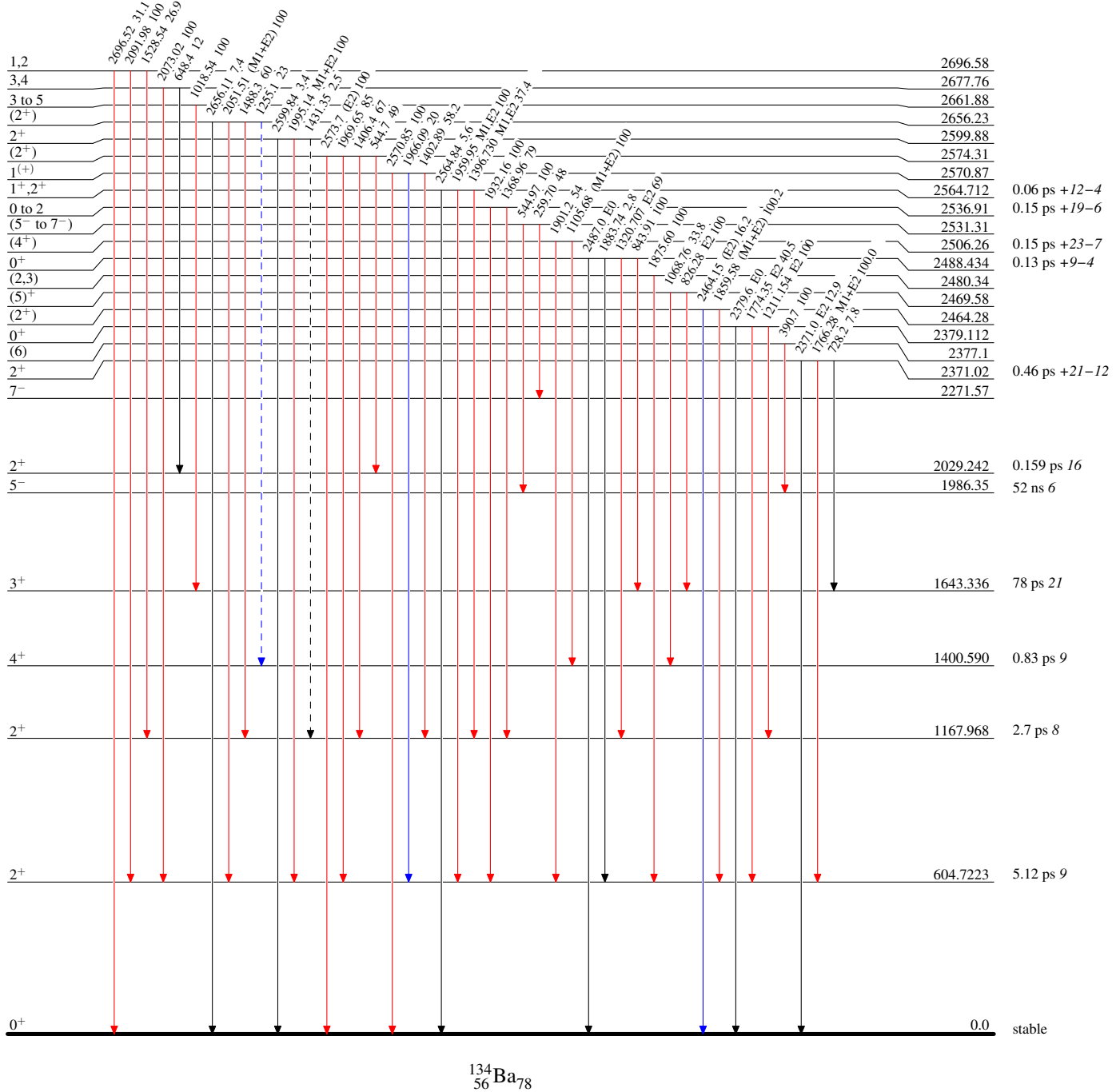
## Adopted Levels, Gammas

## Level Scheme (continued)

Intensities: Type not specified

## Legend

- $\longrightarrow$   $I_\gamma < 2\% \times I_\gamma^{\max}$   
 $\longrightarrow$   $I_\gamma < 10\% \times I_\gamma^{\max}$   
 $\longrightarrow$   $I_\gamma > 10\% \times I_\gamma^{\max}$   
 $\cdots \longrightarrow$   $\gamma$  Decay (Uncertain)

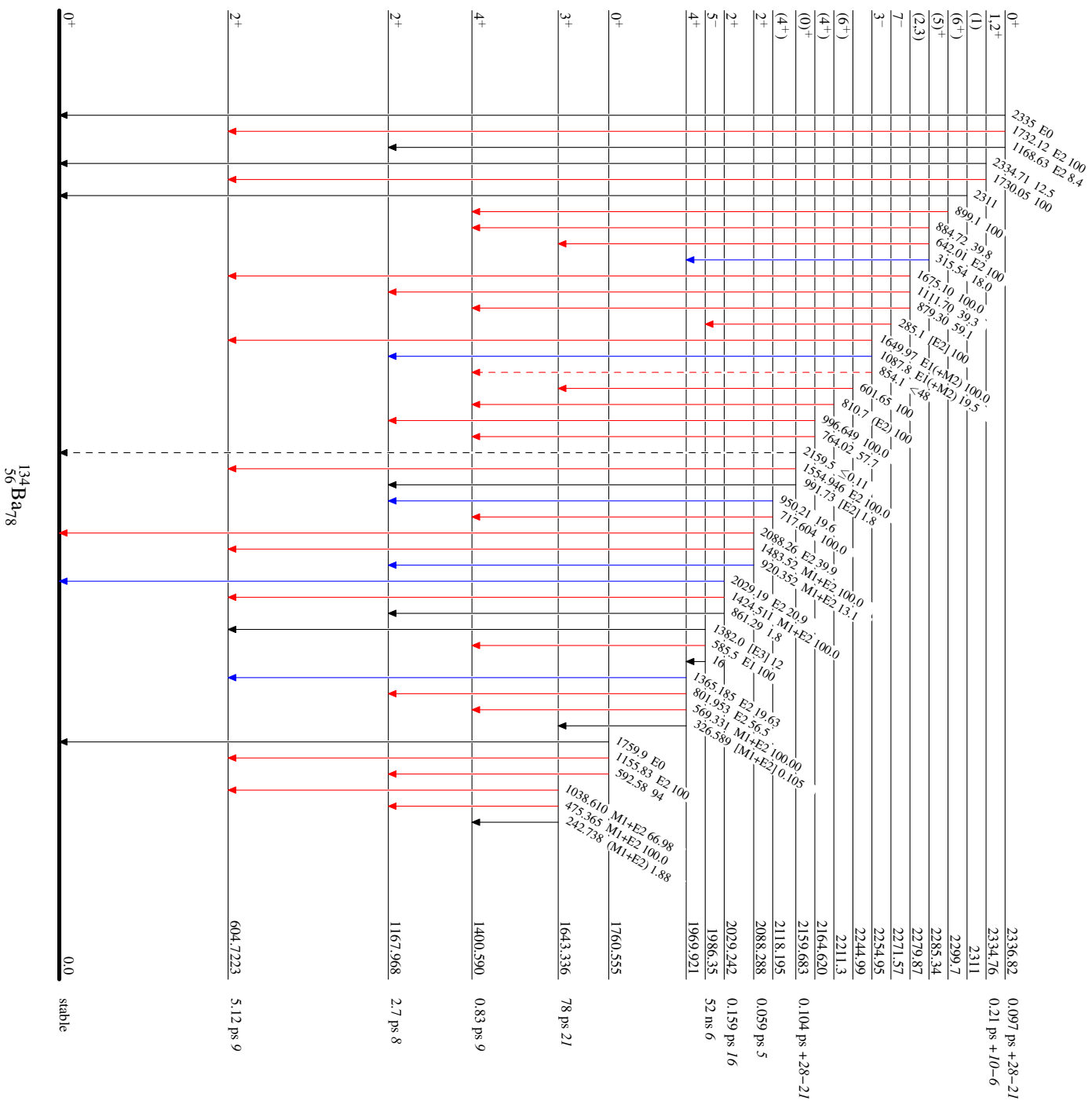


Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Type not specified

- Legend
- $I_\gamma < 2\% \times I_{\gamma}^{\max}$
  - $I_\gamma < 10\% \times I_{\gamma}^{\max}$
  - $I_\gamma > 10\% \times I_{\gamma}^{\max}$
  - $\gamma$  Decay (Uncertain)



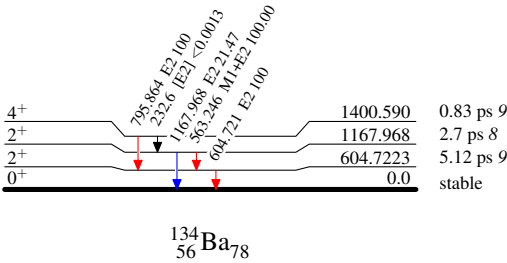
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Type not specified

Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- - - - - →  $\gamma$  Decay (Uncertain)



Adopted Levels, Gammas

