## 1 Half-life, Q-value and Decay mode

| | | | | |
|---|---|---|---|---|
| $T_{1/2}$ | : | 22.00 | (7) | min |
| $Q_\alpha$ | : | 5562 | (3) | keV |
| $Q_{\beta^-}$ | : | 1149.2 | (9) | keV |
| $\beta^-$ | : | 99.980 | (4) | % |
| $\alpha$ | : | 0.020 | (4) | % |

## 2 $\beta^-$ Transitions

| | Energy keV | Probability × 100 | Nature | log $ft$ |
|---|---|---|---|---|
| $\beta^-_{0,32}$ | 120.3 (10) | 0.0012 (3) | Super-allowed or allowed | 7.3 |
| $\beta^-_{0,31}$ | 124.6 (10) | 0.0004 (1) | 1st forbidden | 7.82 |
| $\beta^-_{0,30}$ | 129.9 (10) | 0.00046 (12) | 1st forbidden | 7.82 |
| $\beta^-_{0,29}$ | 191.5 (9) | 0.020 (4) | nth forbidden unique | 6.7 |
| $\beta^-_{0,28}$ | 205.9 (9) | 0.0082 (18) | nth forbidden unique | 7.19 |
| $\beta^-_{0,27}$ | 208.4 (9) | 0.0051 (12) | | 7.41 |
| $\beta^-_{0,26}$ | 222.6 (9) | 0.106 (22) | nth forbidden unique | 6.18 |
| $\beta^-_{0,25}$ | 243.3 (10) | 0.0011 (4) | 1st forbidden | 8.29 |
| $\beta^-_{0,24}$ | 281.9 (9) | 0.025 (5) | nth forbidden unique | 7.14 |
| $\beta^-_{0,23}$ | 302.8 (9) | 0.088 (18) | 1st forbidden | 6.69 |
| $\beta^-_{0,22}$ | 306.9 (9) | 0.035 (7) | nth forbidden unique | 7.11 |
| $\beta^-_{0,21}$ | 323.3 (9) | 0.54 (10) | | 5.99 |
| $\beta^-_{0,20}$ | 326.0 (9) | 0.014 (3) | nth forbidden unique | 7.59 |
| $\beta^-_{0,19}$ | 343.8 (9) | 0.0040 (8) | nth forbidden unique | 8.21 |
| $\beta^-_{0,18}$ | 345.4 (9) | 0.14 (3) | nth forbidden unique | 6.67 |
| $\beta^-_{0,17}$ | 362.1 (9) | 0.019 (4) | 1st forbidden | 7.6 |
| $\beta^-_{0,16}$ | 366.7 (10) | 0.00111 (22) | nth forbidden unique | 8.85 |
| $\beta^-_{0,15}$ | 555.3 (9) | 0.013 (3) | 1st forbidden | 8.38 |
| $\beta^-_{0,14}$ | 773.1 (10) | 0.0046 (12) | | 9.31 |
| $\beta^-_{0,13}$ | 779.9 (9) | 1.8 (4) | | 6.73 |
| $\beta^-_{0,11}$ | 806.7 (9) | 0.037 (8) | 1st forbidden | 8.47 |
| $\beta^-_{0,10}$ | 814.9 (9) | 0.042 (9) | 1st forbidden | 8.43 |
| $\beta^-_{0,9}$ | 819.4 (9) | 0.049 (10) | Super-allowed or allowed | 8.37 |
| $\beta^-_{0,8}$ | 863.1 (9) | 0.032 (9) | 1st forbidden | 8.64 |
| $\beta^-_{0,7}$ | 869.0 (9) | 0.004 (4) | | 9.5 |
| $\beta^-_{0,6}$ | 914.5 (9) | 9.1 (17) | | 6.27 |
| $\beta^-_{0,5}$ | 1025.5 (9) | 0.24 (6) | | 8.02 |
| $\beta^-_{0,4}$ | 1069.6 (9) | 15 (3) | | 6.29 |
| $\beta^-_{0,3}$ | 1087.8 (9) | 0.27 (19) | | 8.1 |
| $\beta^-_{0,2}$ | 1099.1 (9) | 67 (13) | Super-allowed or allowed | 5.68 |
| $\beta^-_{0,1}$ | 1119.3 (9) | 6 (6) | | 6.8 |
| $\beta^-_{0,0}$ | 1149.2 (9) | 1 | 1st forbidden | 7.6 |

## 3 $\alpha$ Emissions

| | Energy keV | Probability × 100 |
|---|---|---|
| $\alpha_{0,4}$ | 5172 (5) | 0.0009 (5) |
| $\alpha_{0,3}$ | 5291 (4) | 0.0060 (26) |
| $\alpha_{0,2}$ | 5314 (4) | 0.0053 (23) |
| $\alpha_{0,1}$ | 5403 (3) | 0.0044 (20) |
| $\alpha_{0,0}$ | 5462 (3) | 0.0033 (15) |

## 4 Electron Emissions

| | | Energy keV | Electrons per 100 disint. | Energy keV |
|---|---|---|---|---|
| $e_{AL}$ | (Ra) | 5.71 - 12.04 | 29 (4) | |
| $e_{AK}$ | (Ra) | | 0.159 (21) | |
| | KLL | 65.149 - 72.729 | } | |
| | KLX | 79.721 - 88.466 | } | |
| | KXY | 94.27 - 103.91 | } | |
| $e_{AL}$ | (At) | 5.6 - 17.4 | 0.0076 (18) | |
| $e_{AK}$ | (At) | | 0.000065 (20) | |
| | KLL | 60.489 - 67.031 | } | |
| | KLX | 73.811 - 81.516 | } | |
| | KXY | 87.10 - 95.72 | } | |
| $ec_{2,1}$ L | (Ra) | 1.04 - 4.83 | 8.1 (17) | |
| $ec_{1,0}$ L | (Ra) | 10.55 - 14.34 | 20 (6) | |
| $ec_{3,1}$ L | (Ra) | 12.46 - 16.25 | 0.26 (8) | |
| $ec_{2,1}$ M | (Ra) | 15.45 - 17.16 | 2.10 (45) | |
| $ec_{5,4}$ L | (Ra) | 24.768 - 28.556 | 0.131 (12) | |
| $ec_{1,0}$ M | (Ra) | 24.96 - 26.68 | 5.0 (14) | |
| $ec_{3,1}$ M | (Ra) | 26.87 - 28.58 | 0.068 (20) | |
| $ec_{4,1}$ L | (Ra) | 30.6 - 34.4 | 1.34 (32) | |
| $ec_{13,6}$ K | (Ra) | 30.68 (2) | 0.092 (18) | |
| $ec_{2,0}$ L | (Ra) | 30.9 - 34.7 | 17.4 (37) | |
| $ec_{5,4}$ M | (Ra) | 39.178 - 40.895 | 0.0344 (32) | |
| $ec_{3,0}$ L | (Ra) | 42.20 - 45.99 | 0.25 (5) | |
| $ec_{4,1}$ M | (Ra) | 45.0 - 46.7 | 0.33 (8) | |
| $ec_{2,0}$ M | (Ra) | 45.3 - 47.0 | 4.3 (9) | |
| $ec_{5,2}$ L | (Ra) | 54.3 - 58.1 | 0.039 (27) | |
| $ec_{3,0}$ M | (Ra) | 56.61 - 58.32 | 0.068 (14) | |
| $ec_{4,0}$ L | (Ra) | 60.42 - 64.21 | 1.38 (28) | |
| $ec_{5,2}$ M | (Ra) | 68.7 - 70.4 | 0.011 (7) | |
| $ec_{6,3}$ K | (Ra) | 69.43 (5) | 0.16 (14) | |
| $ec_{4,0}$ M | (Ra) | 74.83 - 76.54 | 0.33 (7) | |
| $ec_{6,2}$ K | (Ra) | 80.74 (5) | 0.0191 (43) | |
| $ec_{6,1}$ K | (Ra) | 100.93 (5) | 1.47 (28) | |

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| | | Energy keV | Electrons per 100 disint. | Energy keV |
|---|---|---|---|---|
| $ec_{7,3}$ K | (Ra) | 114.88 (5) | 0.0118 (23) | |
| $ec_{13,6}$ L | (Ra) | 115.4 - 119.2 | 0.0192 (38) | |
| $ec_{6,0}$ K | (Ra) | 130.78 (5) | 3.0 (6) | |
| $ec_{7,1}$ K | (Ra) | 146.33 (5) | 0.01506 (22) | |
| $ec_{6,3}$ L | (Ra) | 154.12 - 157.91 | 0.061 (13) | |
| $ec_{6,3}$ M | (Ra) | 168.53 - 170.24 | 0.0156 (38) | |
| $ec_{6,1}$ L | (Ra) | 185.62 - 189.41 | 0.28 (5) | |
| $ec_{6,1}$ M | (Ra) | 200.03 - 201.74 | 0.066 (12) | |
| $ec_{13,2}$ K | (Ra) | 215.33 (5) | 0.215 (42) | |
| $ec_{6,0}$ L | (Ra) | 215.5 - 219.3 | 0.56 (10) | |
| $ec_{6,0}$ M | (Ra) | 229.9 - 231.6 | 0.134 (25) | |
| $ec_{13,2}$ L | (Ra) | 300.02 - 303.81 | 0.040 (8) | |
| $\beta^-_{0,32}$ | max: | 120.3 (10) | 0.0012 (3) | avg: 31.5 (3) |
| $\beta^-_{0,31}$ | max: | 124.6 (10) | 0.0004 (1) | avg: 32.7 (3) |
| $\beta^-_{0,30}$ | max: | 129.9 (10) | 0.00046 (12) | avg: 34.1 (3) |
| $\beta^-_{0,29}$ | max: | 191.5 (9) | 0.020 (4) | avg: 51.5 (3) |
| $\beta^-_{0,28}$ | max: | 205.9 (9) | 0.0082 (18) | avg: 55.6 (3) |
| $\beta^-_{0,27}$ | max: | 208.4 (9) | 0.0051 (12) | avg: 56.3 (3) |
| $\beta^-_{0,26}$ | max: | 222.6 (9) | 0.106 (22) | avg: 60.5 (3) |
| $\beta^-_{0,25}$ | max: | 243.3 (10) | 0.0011 (4) | avg: 66.6 (3) |
| $\beta^-_{0,24}$ | max: | 281.9 (9) | 0.025 (5) | avg: 78.1 (3) |
| $\beta^-_{0,23}$ | max: | 302.8 (9) | 0.088 (18) | avg: 84.4 (3) |
| $\beta^-_{0,22}$ | max: | 306.9 (9) | 0.035 (7) | avg: 85.7 (3) |
| $\beta^-_{0,21}$ | max: | 323.3 (9) | 0.54 (10) | avg: 90.7 (3) |
| $\beta^-_{0,20}$ | max: | 326.0 (9) | 0.014 (3) | avg: 91.5 (3) |
| $\beta^-_{0,19}$ | max: | 343.8 (9) | 0.0040 (8) | avg: 97.0 (3) |
| $\beta^-_{0,18}$ | max: | 345.4 (9) | 0.14 (3) | avg: 97.5 (3) |
| $\beta^-_{0,17}$ | max: | 362.1 (9) | 0.019 (4) | avg: 102.7 (3) |
| $\beta^-_{0,16}$ | max: | 366.7 (10) | 0.00111 (22) | avg: 104.1 (3) |
| $\beta^-_{0,15}$ | max: | 555.3 (9) | 0.013 (3) | avg: 165.6 (4) |
| $\beta^-_{0,14}$ | max: | 773.1 (10) | 0.0046 (12) | avg: 241.3 (4) |
| $\beta^-_{0,13}$ | max: | 779.9 (9) | 1.8 (4) | avg: 243.7 (4) |
| $\beta^-_{0,11}$ | max: | 806.7 (9) | 0.037 (8) | avg: 253.3 (4) |
| $\beta^-_{0,10}$ | max: | 814.9 (9) | 0.042 (9) | avg: 256.3 (4) |
| $\beta^-_{0,9}$ | max: | 819.4 (9) | 0.049 (10) | avg: 257.9 (4) |
| $\beta^-_{0,8}$ | max: | 863.1 (9) | 0.032 (9) | avg: 273.8 (4) |
| $\beta^-_{0,7}$ | max: | 869.0 (9) | 0.004 (4) | avg: 275.9 (4) |
| $\beta^-_{0,6}$ | max: | 914.5 (9) | 9.1 (17) | avg: 292.6 (4) |
| $\beta^-_{0,5}$ | max: | 1025.5 (9) | 0.24 (6) | avg: 333.9 (4) |
| $\beta^-_{0,4}$ | max: | 1069.6 (9) | 15 (3) | avg: 350.5 (4) |
| $\beta^-_{0,3}$ | max: | 1087.8 (9) | 0.27 (19) | avg: 357.4 (4) |
| $\beta^-_{0,2}$ | max: | 1099.1 (9) | 67 (13) | avg: 361.7 (4) |
| $\beta^-_{0,1}$ | max: | 1119.3 (9) | 6 (6) | avg: 369.4 (4) |
| $\beta^-_{0,0}$ | max: | 1149.2 (9) | 1 | avg: 380.8 (4) |

# 5 Photon Emissions

## 5.1 X-Ray Emissions

| | | Energy keV | | Photons per 100 disint. | |
|---|---|---|---|---|---|
| XL | (Ra) | 10.6241 — 18.3539 | | 24 (3) | |
| $XK\alpha_2$ | (Ra) | 85.43 | | 1.44 (19) | } Kα |
| $XK\alpha_1$ | (Ra) | 88.47 | | 2.3 (3) | } |
| $XK\beta_3$ | (Ra) | 99.432 | } | | |
| $XK\beta_1$ | (Ra) | 100.13 | } | 0.83 (11) | $K\beta_1'$ |
| $XK\beta_5''$ | (Ra) | 100.738 | } | | |
| $XK\beta_2$ | (Ra) | 102.89 | } | | |
| $XK\beta_4$ | (Ra) | 103.295 | } | 0.27 (4) | $K\beta_2'$ |
| $XKO_{2,3}$ | (Ra) | 103.74 | } | | |
| XL | (At) | 9.8964 — 16.7291 | | 0.0054 (13) | |
| $XK\alpha_2$ | (At) | 78.94 | | 0.00056 (15) | } Kα |
| $XK\alpha_1$ | (At) | 81.51 | | 0.00092 (25) | } |
| $XK\beta_3$ | (At) | 91.73 | } | | |
| $XK\beta_1$ | (At) | 92.315 | } | 0.00031 (11) | $K\beta_1'$ |
| $XK\beta_5''$ | (At) | 92.883 | } | | |
| $XK\beta_2$ | (At) | 94.846 | } | | |
| $XK\beta_4$ | (At) | 95.211 | } | 0.00011 (6) | $K\beta_2'$ |
| $XKO_{2,3}$ | (At) | 95.595 | } | | |

## 5.2 Gamma Transitions and Emissions

| | Energy keV | $P_{\gamma+ce}$ × 100 | Multipolarity | $\alpha_T$ | $P_\gamma$ × 100 |
|---|---|---|---|---|---|
| $\gamma_{2,1}$(Ra) | 20.27 (5) | 12.3 (26) | [E1] | 7.76 (22) | 1.4 (3) |
| $\gamma_{1,0}$(Ra) | 29.78 (4) | 26 (7) | M1+8.26%E2 | 370 (50) | 0.070 (17) |
| $\gamma_{3,1}$(Ra) | 31.69 (5) | 0.35 | M1+7.27%E2 | 260 (80) | 0.00135 |
| $\gamma_{9,8}$(Ra) | 43.5 (2) | 0.0044 | E1 | 1.015 (19) | 0.0022 |
| $\gamma_{5,4}$(Ra) | 44.0 (1) | 0.178 | M1+21.3%E2 | 131 (12) | 0.00135 |
| $\gamma_{4,1}$(Ra) | 49.80 (5) | 4.3 (10) | E1 | 0.708 (10) | 2.5 (6) |
| $\gamma_{2,0}$(Ra) | 50.10 (2) | 56 (12) | E1 | 0.696 (10) | 33 (7) |
| $\gamma_{1,0}$(At) | 58.9 (2) | 0.0095 (36) | M1 | 10.87 (19) | 0.0008 (3) |
| $\gamma_{3,0}$(Ra) | 61.43 (5) | 0.34 (7) | E2 | 96.5 (14) | 0.0035 (7) |
| $\gamma_{5,3}$(Ra) | 62.31 (6) | 0.022 (10) | E1 | 0.389 (6) | 0.016 (7) |
| $\gamma_{5,2}$(Ra) | 73.5 (1) | 0.054 (38) | E2 | 40.8 (6) | 0.0013 (9) |
| $\gamma_{4,0}$(Ra) | 79.65 (2) | 10.8 (22) | E1 | 0.202 (3) | 9.0 (18) |
| $\gamma_{13,7}$(Ra) | 89.08 (10) | 0.054 (11) | | | 0.054 (11) |
| $\gamma_{5,1}$(Ra) | 93.88 (5) | 0.067 (16) | E1 | 0.1305 (18) | 0.059 (14) |
| $\gamma_{6,5}$(Ra) | 111.05 (3) | 0.0049 (14) | | | 0.0049 (14) |
| $\gamma_{13,6}$(Ra) | 134.60 (2) | 0.62 (12) | [E1] | 0.234 (3) | 0.5 (1) |

| | Energy keV | $P_{\gamma+ce}$ × 100 | Multipolarity | $\alpha_T$ | $P_\gamma$ × 100 |
|---|---|---|---|---|---|
| $\gamma_{4,2}$(At) | 145.3 (3) | 0.00078 (47) | M1+(E2) | 2.9 (13) | 0.0002 (1) |
| $\gamma_{2,0}$(At) | 150.9 (2) | 0.0135 (12) | E2 | 1.417 (21) | 0.0056 (5) |
| $\gamma_{6,4}$(Ra) | 155.5 (5) | 0.0027 | | | 0.0027 |
| $\gamma_{6,3}$(Ra) | 173.35 (5) | 0.36 (15) | M1,E2 | 2.1 (12) | 0.115 (22) |
| $\gamma_{6,2}$(Ra) | 184.65 (5) | 0.24 (6) | E1 | 0.1092 (15) | 0.22 (5) |
| $\gamma_{7,4}$(Ra) | 200.7 (2) | 0.0027 (10) | | | 0.0027 (10) |
| $\gamma_{6,1}$(Ra) | 204.85 (5) | 2.8 (5) | M1+1.42%E2 | 2.02 (5) | 0.92 (18) |
| $\gamma_{9,5}$(Ra) | 205.6 (2) | 0.0090 (17) | E2 | 0.530 (8) | 0.0059 (11) |
| $\gamma_{10,5}$(Ra) | 210.60 (5) | 0.0105 (21) | E1 | 0.0798 (11) | 0.0097 (19) |
| $\gamma_{7,3}$(Ra) | 218.80 (5) | 0.0232 (46) | M1 | 1.701 (24) | 0.0086 (17) |
| $\gamma_{6,0}$(Ra) | 234.70 (5) | 6.5 (12) | M1(+0.5%E2) | 1.393 (16) | 2.7 (5) |
| $\gamma_{8,2}$(Ra) | 236.05 (5) | 0.029 (8) | E1 | 0.0610 (9) | 0.027 (8) |
| $\gamma_{13,5}$(Ra) | 245.60 (5) | 0.019 (4) | | | 0.019 (4) |
| $\gamma_{9,4}$(Ra) | 250.25 (5) | 0.0043 | M1+81.5%E2 | 0.44 (7) | 0.003 |
| $\gamma_{7,1}$(Ra) | 250.25 (5) | 0.035 | M1 | 1.170 (16) | 0.016 |
| $\gamma_{10,4}$(Ra) | 254.6 (2) | 0.0060 (13) | E1 | 0.0512 (7) | 0.0057 (12) |
| $\gamma_{8,1}$(Ra) | 256.18 (5) | 0.025 (5) | E2 | 0.250 (4) | 0.020 (4) |
| $\gamma_{11,4}$(Ra) | 262.9 (2) | 0.0037 (12) | E1 | 0.0475 (7) | 0.0035 (11) |
| $\gamma_{10,3}$(Ra) | 272.8 (2) | 0.0064 (23) | M1+E2 | 0.6 (4) | 0.004 (1) |
| $\gamma_{7,0}$(Ra) | 280.7 (5) | 0.0003 | | | 0.0003 |
| $\gamma_{11,3}$(Ra) | 280.7 (5) | 0.0003 | | | 0.0003 |
| $\gamma_{8,0}$(Ra) | 286.0 (2) | 0.0069 (24) | M1+E2 | 0.5 (4) | 0.0046 (10) |
| $\gamma_{13,4}$(Ra) | 289.67 (5) | 0.21 | | | 0.21 |
| $\gamma_{14,4}$(Ra) | 296.5 (2) | 0.0022 (7) | M1+1.66%E2 | 0.723 (9) | 0.0013 (4) |
| $\gamma_{9,1}$(Ra) | 299.95 (5) | 0.0207 (41) | E1 | 0.0352 (5) | 0.020 (4) |
| $\gamma_{10,1}$(Ra) | 304.40 (5) | 0.0142 (28) | M1+6.3%E2(+E0) | 0.647 (14) | 0.0086 (17) |
| $\gamma_{15,8}$(Ra) | 307.93 (5) | 0.012 (3) | | | 0.012 (3) |
| $\gamma_{13,3}$(Ra) | 307.93 (5) | 0.0013 (13) | | | 0.0013 (13) |
| $\gamma_{11,1}$(Ra) | 312.65 (5) | 0.026 (6) | M1+2.5%E2 | 0.621 (10) | 0.016 (4) |
| $\gamma_{14,3}$(Ra) | 314.6 (2) | 0.0023 (7) | E1 | 0.0316 (5) | 0.0022 (7) |
| $\gamma_{13,2}$(Ra) | 319.25 (5) | 0.73 (14) | M1+3.14%E2 | 0.583 (10) | 0.46 (9) |
| $\gamma_{9,0}$(Ra) | 329.80 (5) | 0.025 (5) | (E1) | 0.0285 (4) | 0.024 (5) |
| $\gamma_{10,0}$(Ra) | 334.30 (6) | 0.0119 (24) | M1+27.12%E2 | 0.414 (13) | 0.0084 (17) |
| $\gamma_{13,1}$(Ra) | 339.50 (5) | 0.062 (13) | | | 0.062 (13) |
| $\gamma_{11,0}$(Ra) | 342.50 (7) | 0.0145 (30) | M1+62.5%E2 | 0.250 (5) | 0.0116 (24) |
| $\gamma_{12,0}$(Ra) | 350.5 (2) | 0.0028 (15) | E1 | 0.0249 (4) | 0.0027 (15) |
| $\gamma_{13,0}$(Ra) | 369.32 (5) | 0.089 (18) | | | 0.089 (18) |
| $\gamma_{18,13}$(Ra) | 434.4 (1) | 0.0022 (7) | | | 0.0022 (7) |
| $\gamma_{16,11}$(Ra) | 439.6 (3) | 0.00030 (8) | | | 0.00030 (8) |
| $\gamma_{17,11}$(Ra) | 444.5 (3) | 0.0011 (4) | | | 0.0011 (4) |
| $\gamma_{16,9}$(Ra) | 452.9 (2) | 0.0008 | | | 0.0008 |
| $\gamma_{17,10}$(Ra) | 452.9 (2) | 0.0008 | | | 0.0008 |
| $\gamma_{17,9}$(Ra) | 457.5 (2) | 0.0008 | | | 0.0008 |
| $\gamma_{18,10}$(Ra) | 469.3 (2) | 0.001 | | | 0.001 |
| $\gamma_{15,5}$(Ra) | 469.3 (2) | 0.001 | | | 0.001 |
| $\gamma_{19,9}$(Ra) | 475.4 (1) | 0.0027 | | | 0.0027 |
| $\gamma_{21,12}$(Ra) | 475.4 (1) | 0.003 | | | 0.003 |
| $\gamma_{20,11}$(Ra) | 480.9 (3) | 0.0013 (4) | | | 0.0013 (4) |

| | Energy keV | $P_{\gamma+ce}$ × 100 | Multipolarity | $\alpha_T$ | $P_\gamma$ × 100 |
|---|---|---|---|---|---|
| $\gamma_{20,9}$(Ra) | 493.4 (2) | 0.0024 (7) | | | 0.0024 (7) |
| $\gamma_{17,7}$(Ra) | 506.9 (2) | 0.0022 (7) | | | 0.0022 (7) |
| $\gamma_{23,9}$(Ra) | 516.7 (2) | 0.0032 (8) | | | 0.0032 (8) |
| $\gamma_{24,11}$(Ra) | 524.8 (2) | 0.0043 (12) | | | 0.0043 (12) |
| $\gamma_{24,10}$(Ra) | 533.1 (3) | 0.0019 (7) | | | 0.0019 (7) |
| $\gamma_{20,8}$(Ra) | 537.2 (2) | 0.0032 | | | 0.0032 |
| $\gamma_{24,9}$(Ra) | 537.2 (2) | 0.0019 | | | 0.0019 |
| $\gamma_{21,8}$(Ra) | 539.8 (2) | 0.0059 (18) | | | 0.0059 (18) |
| $\gamma_{21,7}$(Ra) | 545.4 (4) | 0.00030 (8) | | | 0.00030 (8) |
| $\gamma_{17,6}$(Ra) | 552.3 (2) | 0.0027 (8) | | | 0.0027 (8) |
| $\gamma_{22,8}$(Ra) | 556.3 (3) | 0.0011 (4) | | | 0.0011 (4) |
| $\gamma_{18,6}$(Ra) | 569.03 (8) | 0.049 (11) | | | 0.049 (11) |
| $\gamma_{25,9}$(Ra) | 576.1 (4) | 0.0011 (4) | | | 0.0011 (4) |
| $\gamma_{24,8}$(Ra) | 581.3 (4) | 0.0013 (4) | | | 0.0013 (4) |
| $\gamma_{26,10}$(Ra) | 592.3 (2) | 0.0032 (10) | | | 0.0032 (10) |
| $\gamma_{26,9}$(Ra) | 596.9 (4) | 0.0008 (3) | | | 0.0008 (3) |
| $\gamma_{28,11}$(Ra) | 600.7 (4) | 0.00054 (14) | | | 0.00054 (14) |
| $\gamma_{22,6}$(Ra) | 607.6 (3) | 0.0022 (7) | | | 0.0022 (7) |
| $\gamma_{28,9}$(Ra) | 613.6 (4) | 0.0011 (4) | | | 0.0011 (4) |
| $\gamma_{24,6}$(Ra) | 632.7 (3) | 0.0022 (7) | | | 0.0022 (7) |
| $\gamma_{17,5}$(Ra) | 663.7 (3) | 0.0011 (4) | | | 0.0011 (4) |
| $\gamma_{29,8}$(Ra) | 671.9 (4) | 0.00054 (14) | | | 0.00054 (14) |
| $\gamma_{17,4}$(Ra) | 708.3 (3) | 0.0013 (4) | | | 0.0013 (4) |
| $\gamma_{23,5}$(Ra) | 722.65 (5) | 0.038 (9) | | | 0.038 (9) |
| $\gamma_{18,4}$(Ra) | 724.15 (5) | 0.014 (4) | | | 0.014 (4) |
| $\gamma_{17,2}$(Ra) | 737.4 (3) | 0.0009 (3) | | | 0.0009 (3) |
| $\gamma_{18,3}$(Ra) | 742.4 (3) | 0.0011 (4) | | | 0.0011 (4) |
| $\gamma_{21,4}$(Ra) | 746.30 (5) | 0.020 (5) | | | 0.020 (5) |
| $\gamma_{18,2}$(Ra) | 753.65 (5) | 0.0094 (22) | | | 0.0094 (22) |
| $\gamma_{17,1}$(Ra) | 757.20 (5) | 0.0076 (20) | | | 0.0076 (20) |
| $\gamma_{22,4}$(Ra) | 762.6 (2) | 0.0024 (7) | | | 0.0024 (7) |
| $\gamma_{23,4}$(Ra) | 766.64 (5) | 0.022 (5) | | | 0.022 (5) |
| $\gamma_{21,2}$(Ra) | 775.83 (5) | 0.45 (9) | | | 0.45 (9) |
| $\gamma_{22,3}$(Ra) | 780.8 (1) | 0.003 (1) | | | 0.003 (1) |
| $\gamma_{23,3}$(Ra) | 784.93 (5) | 0.0086 (21) | | | 0.0086 (21) |
| $\gamma_{24,4}$(Ra) | 787.6 (2) | 0.0024 (7) | | | 0.0024 (7) |
| $\gamma_{17,0}$(Ra) | 787.6 (2) | 0.0003 (3) | | | 0.0003 (3) |
| $\gamma_{22,2}$(Ra) | 792.2 (3) | 0.00054 (14) | | | 0.00054 (14) |
| $\gamma_{23,2}$(Ra) | 796.22 (5) | 0.0108 (25) | | | 0.0108 (25) |
| $\gamma_{18,0}$(Ra) | 803.77 (5) | 0.059 (14) | | | 0.059 (14) |
| $\gamma_{19,0}$(Ra) | 806.0 (2) | 0.0013 (4) | | | 0.0013 (4) |
| $\gamma_{22,1}$(Ra) | 812.40 (6) | 0.021 (5) | | | 0.021 (5) |
| $\gamma_{27,5}$(Ra) | 816.5 (2) | 0.0013 (4) | | | 0.0013 (4) |
| $\gamma_{20,0}$(Ra) | 823.20 (7) | 0.0070 (16) | | | 0.0070 (16) |
| $\gamma_{21,0}$(Ra) | 825.95 (7) | 0.054 (13) | | | 0.054 (13) |
| $\gamma_{29,5}$(Ra) | 833.9 (2) | 0.0013 (4) | | | 0.0013 (4) |
| $\gamma_{24,1}$(Ra) | 837.5 (1) | 0.0097 (21) | | | 0.0097 (21) |
| $\gamma_{22,0}$(Ra) | 842.2 (1) | 0.0049 (11) | | | 0.0049 (11) |

| | Energy keV | $P_{\gamma+ce}$ × 100 | Multipolarity | $\alpha_T$ | $P_\gamma$ × 100 |
|---|---|---|---|---|---|
| $\gamma_{26,4}$(Ra) | 846.85 (10) | 0.049 (13) | | | 0.049 (13) |
| $\gamma_{23,0}$(Ra) | 846.85 (10) | 0.005 (3) | | | 0.005 (3) |
| $\gamma_{28,4}$(Ra) | 863.6 (1) | 0.0038 (9) | | | 0.0038 (9) |
| $\gamma_{24,0}$(Ra) | 867.4 (1) | 0.0016 (4) | | | 0.0016 (4) |
| $\gamma_{26,2}$(Ra) | 876.5 (1) | 0.038 (9) | | | 0.038 (9) |
| $\gamma_{29,4}$(Ra) | 878.1 (2) | 0.0032 (8) | | | 0.0032 (8) |
| $\gamma_{28,2}$(Ra) | 893.1 (2) | 0.0024 (7) | | | 0.0024 (7) |
| $\gamma_{26,1}$(Ra) | 896.7 (2) | 0.013 (3) | | | 0.013 (3) |
| $\gamma_{29,2}$(Ra) | 907.6 (2) | 0.014 (3) | | | 0.014 (3) |
| $\gamma_{27,1}$(Ra) | 911.3 (3) | 0.0008 (3) | | | 0.0008 (3) |
| $\gamma_{28,1}$(Ra) | 913.6 (3) | 0.00041 (14) | | | 0.00041 (14) |
| $\gamma_{26,0}$(Ra) | 926.5 (3) | 0.0016 (4) | | | 0.0016 (4) |
| $\gamma_{27,0}$(Ra) | 941.2 (3) | 0.0030 (8) | | | 0.0030 (8) |
| $\gamma_{32,4}$(Ra) | 949.3 (4) | 0.00032 (8) | | | 0.00032 (8) |
| $\gamma_{29,0}$(Ra) | 958.0 (7) | 0.00035 (8) | | | 0.00035 (8) |
| $\gamma_{30,2}$(Ra) | 969.2 (4) | 0.00032 (8) | | | 0.00032 (8) |
| $\gamma_{31,2}$(Ra) | 975.2 (5) | 0.00016 (5) | | | 0.00016 (5) |
| $\gamma_{32,2}$(Ra) | 978.7 (4) | 0.00067 (12) | | | 0.00067 (12) |
| $\gamma_{30,1}$(Ra) | 989.4 (5) | 0.00014 (3) | | | 0.00014 (3) |
| $\gamma_{31,1}$(Ra) | 994.3 (3) | 0.00011 (3) | | | 0.00011 (3) |
| $\gamma_{32,1}$(Ra) | 999.3 (5) | 0.00019 (4) | | | 0.00019 (4) |
| $\gamma_{31,0}$(Ra) | 1025.1 (5) | 0.00014 (3) | | | 0.00014 (3) |

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