Table of Gamma-Rays from Radioactive Decay

This table is an energy-ordered list of about 91,000 γ rays from the radioactive decay of all parent nuclides in the *Table of Isotopes* . The energies are given in keV and are displayed in red for parents with half-lives greater than 1 d and in bold red for parents with half-lives greater than 1 y. The intensities are provided on an absolute scale (γ 's per 100 parent decays) except when preceded by a †. The parent nuclide with its half-life is listed after the intensity followed by E_γ for the most intense associated lines from each decay listed in order of decreasing intensity.

8th Edition of the Table of Isotopes: 1999 Update - Energy-Ordered Gamma-Ray Table

Energy	Intensity	Parent - Associated γ-rays
0.0768 *5*		^{235}Pa(24.5 m) - 652.053, 659.3, 645.896
0.0768 *5*		^{239}Pu(24110 y) - 51.624, 38.661, 129.297
0.0768 *5*		^{235}U(25 m)
0.22 *5*		^{229}U(58 m) - 122.51, 88.43, 198.83
0.57 *3*		^{255}Fm(20.07 h) - 81.477, 58.477, 80.92
0.91		^{154}Eu(46.3 m) - 68.1711, 100.8592, 35.8352
1.113		^{110}Ag(249.79 d) - 116.48
1.11 *70*		^{254}Es(275.7 d) - 63.0, 316, 304
1.11 *70*		^{254}Es(39.3 h) - 211.80, 177.30, 71.30
1.565 *6*		^{201}Au(26 m) - 542.6, 517.0, 613.2
1.565 *6*		^{201}Tl(72.912 h) - 167.43, 135.34, 32.19
1.58 *4*		^{141}Sm(22.6 m) - 196.88, 431.6, 777.6
1.58 *4*		^{141}Eu(40.7 s) - 394.0, 384.5, 382.9
1.642 *2*	0.0081	^{193}Pt(4.33 d) - 12.634, 135.50
1.642 *2*		^{193}Au(17.65 h) - 186.17, 255.57, 268.22
1.642 *2*		^{193}Au(3.9 s) - 135.50, 12.634
1.7 *3*		^{171}Hf(12.1 h) - 122.0, 662.2, 347.18
1.8307 *14*		^{153}Tb(2.34 d) - 212.0040, 109.7601, 102.2564
2.1726 *4*		^{99}Mo(65.94 h) - 140.511, 739.50, 181.063
2.1726 *4*		^{99}Tc(6.01 h) - 140.511, 142.628
2.3 *4*		^{90}Mo(5.56 h) - 257.34, 122.370, 203.13
2.3		^{237}U(6.75 d) - 59.5412, 208.00, 26.3448
2.3 *4*		^{90}Nb(18.81 s) - 122.370
2.329 *7*		^{205}Bi(15.31 d) - 1764.36, 703.44, 987.62
2.46 *20*	0.115 *14*	^{173}Er(1.4 m) - 895.2, 199.2, 192.8
2.63		^{188}Re(18.6 m) - 63.582, 105.87, 92.461
2.70 *10*		^{103}Tc(54.2 s) - 346.380, 136.079, 562.90
2.70 *10*	0.27 *calc*	^{103}Ru(1.69 ms) - 210.64, 213.17, 24.6
2.7 *8*		^{175}Er(1.2 m) - 1167.5, 234.0, 120.9
~3		^{186}Re(2.0×10^{5} y) - 59.009, 40.350, 99.362
3.1 *1*		^{143}Ba(14.33 s) - 211.475, 798.79, 980.45
3.2 *2*		^{74}Zn(95.6 s) - 49.087, 143.137, 56.559
3.2 *2*		^{74}Ga(9.5 s) - 56.559, 59.7
3.683 *4*		^{142}Pr(14.6 m)
3.84 *4*		^{181}Hf(42.39 d) - 482.182, 133.024, 345.916
4.0		^{146}Ba(2.22 s) - 140.7, 251.2, 121.2
4.02 *3*		^{208}At(1.63 h) - 686.527, 660.040, 177.595
4.2		^{163}Lu(238 s) - 163.08, 54.00, 396.34
4.25 *2*		^{167}Lu(51.5 m) - 29.66, 239.22, 213.19
4.4 *10*		^{223}Ra(11.435 d) - 269.459, 154.21, 323.871
4.670 *8*	2.65×10^{-5} *18*	^{173}Hf(23.6 h) - 123.672, 296.974, 139.634
4.71 *11*		^{204}Po(3.53 h) - 883.984, 270.068, 1016.31
4.821 *3*	0.061 *16*	^{151}Pm(28.40 h) - 340.08, 167.75, 275.21
4.85 *5*	0.19 *3*	^{138}Xe(14.08 m) - 258.411, 434.562, 1768.26
4.87 *16*		^{186}Pt(2.2 h) - 689.4, 611.5, 210.4
4.9		^{185}Ir(14.4 h) - 254.4, 1828.8, 60.0
4.9 *2*		^{203}Pb(6.3 s) - 825.2, 820.3
4.9 *2*		^{203}Pb(0.48 s) - 838.6, 258.5, 873.84
4.9 *2*	2.2×10^{-10}	^{203}Bi(11.76 h) - 820.3, 825.2, 896.9
5.0 *3*		^{162}Hf(37.6 s) - 173.90, 196.34, 410.12
5 *5*		^{199}Pb(12.2 m) - 366.90, 382.8, 2751.9

Energy	Intensity	Parent - Associated γ-rays
5 *5*		^{199}Bi(27 m) - 560.1, 424.85, 841.7
5.025 *6*		^{171}Er(7.516 h) - 308.31, 295.901, 111.621
5.1		^{86}Se(15.3 s) - 2441.1, 2660.0, 48.3
5.23 *9*		^{83}Sr(32.41 h) - 762.65, 381.53, 418.37
5.472 *7*		^{182}Os(22.10 h) - 510.056, 180.230, 263.285
5.5		^{237}Np(2.144×10^{6} y) - 29.374, 86.477, 94.66
5.5		^{245}Bk(4.94 d) - 205.879, 471.805, 164.8
5.55 *5*		^{204}Po(3.53 h) - 883.984, 270.068, 1016.31
5.72		^{165}Lu(10.74 m) - 132.49, 120.60, 174.25
5.8 *1*		^{185}Pt(33.0 m) - 229.60, 135.3, 197.4
5.87 *3*		^{201}Tl(72.912 h) - 167.43, 135.34, 32.19
6.10		^{152}Tb(4.2 m) - 344.2785, 411.1163, 471.9
6.22 *4*		^{189}Au(28.7 m) - 713.17, 812.68, 447.65
6.22 *4*		^{189}Au(4.59 m) - 166.40, 320.2, 19.0
6.238 *20*	0.0115 *4*	^{181}Hf(42.39 d) - 482.182, 133.024, 345.916
6.238 *20*	1.03 *3*	^{181}W(121.2 d) - 136.266, 152.315
6.281 *7*	0.5 *calc*	^{101}Mo(14.61 m) - 590.10, 191.92, 1012.47
6.28 *3*		^{228}Ra(5.75 y) - 13.52, 16.2, 12.75
6.29 *8*		^{121}In(23.1 s) - 925.57, 261.96, 657.32
6.29 *8*		^{121}Sn(55 y)
6.3 *3*		^{227}Th(18.72 d) - 235.971, 50.13, 256.25
6.31 *4*		^{204}Bi(11.22 h) - 899.15, 374.72, 984.02
6.469 *50*	0.162 *14*	^{141}Cs(24.94 s) - 48.53, 561.63, 1194.02
6.5 *4*		^{75}Br(96.7 m) - 286.572, 141.3147, 427.883
6.5 *1*	0.40 *13*	^{75}Kr(4.3 m) - 132.43, 154.66, 153.15
6.5 *30*		^{201}Po(8.9 m) - 967.4, 964.3, 411.9
6.5 *30*		^{201}At(89 s) - 571.0, 417.9
6.55 *5*		^{129}Ba(2.23 h) - 214.30, 220.83, 129.14
6.55 *5*		^{129}Ba(2.16 h) - 182.32, 1459.1, 202.38
6.67 *2*		^{228}Ra(5.75 y) - 13.52, 16.2, 12.75
6.68 *5*	0.016	^{233}Th(22.3 m) - 86.477, 29.374, 459.222
6.68 *5*		^{237}Np(2.144×10^{6} y) - 29.374, 86.477, 94.66
6.77		^{159}Er(36 m) - 624.5, 649.1, 205.92
6.9 *4*		^{104}Ag(33.5 m) - 555.796, 1238.0, 2276.7
6.9		^{224}Ac(2.78 h) - 156.82, 140.7, 144.44
6.9 *4*		^{104}Cd(57.7 m) - 83.7, 709.6, 559.1
6.93 *4*		^{167}Yb(17.5 m) - 113.34, 106.18, 176.25
6.96 *6*		^{85}Sr(67.63 m) - 151.159, 129.820, 731.812
6.96 *6*		^{85}Y(2.68 h) - 231.67, 504.45, 913.93
6.96 *6*		^{85}Y(4.86 h) - 231.67, 2123.8, 767.40
7.1		^{154}Eu(46.3 m) - 68.1711, 100.8592, 35.8352
7.133 *10*	4.95 *15*	^{160}Er(28.58 h) - 59.98
7.150 *14*	0.0034 *6*	^{187}W(23.72 h) - 685.774, 479.531, 72.001
7.3		^{161}Yb(4.2 m) - 78.20, 599.88, 631.45
7.30 *23*		^{179}W(6.40 m) - 238.61, 281.70, 222.5
7.3 *4*		^{203}Au(53 s) - 217.7, 43.5, 50.8
7.45	0.035	^{121}Ag(0.78 s) - 314.55, 353.43, 500.61
7.5 *calc*		^{232}Ra(250 s) - 470.9, 97.7, 478.5
7.535 *5*		^{153}Pm(5.25 m) - 127.298, 35.842, 119.763
7.535 *5*		^{153}Sm(10.6 ms) - 32.9, 45.996, 57.94
7.68 *3*	0.0064 *21*	^{163}Yb(11.05 m) - 860.28, 63.62, 123.21

8th Edition of the Table of Isotopes: 1999 Update - Energy-Ordered Gamma-Ray Table

Energy	Intensity	Parent - Associated γ-rays
7.861 *2*		^{239}Np(2.3565 d) - 106.125, 277.599, 228.183
7.861 *2*	0.011 *calc*	^{239}Am(11.9 h) - 49.10, 277.599, 228.183
7.861 *2*	0.0130 *10*	^{243}Cm(29.1 y) - 277.599, 228.183, 209.753
8 *8*		^{185}Hg(21.6 s) - 106, 159.42, 118.88
8.0	0.007	^{227}Pa(38.3 m) - 64.62, 110.05, 84.8
8.1 *2*		^{254}Es(275.7 d) - 63.0, 316, 304
8.2 *1*		^{227}Th(18.72 d) - 235.971, 50.13, 256.25
8.22 *5*		^{233}Th(22.3 m) - 86.477, 29.374, 459.222
8.22 *5*		^{237}Np(2.144×10^{6} y) - 29.374, 86.477, 94.66
8.3 *calc*		^{251}Fm(5.30 h) - 425.4, 480.4, 358.3
8.4 *2*		^{129}La(11.6 m) - 278.6, 110.5, 457.0
8.4 *2*		^{129}Ba(2.16 h)
8.41031 *19*	0.158 *18*	^{169}Er(9.40 d) - 109.77987, 118.19018
8.41031 *19*	0.333 *14*	^{169}Yb(32.026 d) - 63.12077, 197.95788, 177.21402
8.5		^{166}Lu(2.12 m) - 1427.18, 2098.6, 1256.64
8.6		^{154}Eu(46.3 m) - 68.1711, 100.8592, 35.8352
8.7 *2*		^{104}Zr(1.2 s) - 100.9, 504.7, 445.0
8.7		^{114}Te(15.2 m) - 90.29, 1896.77, 726.9
8.7		^{142}Ba(10.6 m) - 255.300, 1204.3, 895.2
8.7 *6*		^{179}W(6.40 m) - 238.61, 281.70, 222.5
8.78 *7*	~3.0×10^{-5}	^{249}Cm(64.15 m) - 634.31, 560.45, 368.76
8.78 *7*		^{253}Es(20.47 d) - 41.79, 389.11, 387.1
8.9		^{144}Ba(11.5 s) - 103.855, 430.48, 172.828
8.9		^{185}Hg(21.6 s) - 106, 159.42, 118.88
9.0		^{230}Ra(93 m) - 72.0, 63.0, 202.8
9.0		^{237}Np(2.144×10^{6} y) - 29.374, 86.477, 94.66
9.1 *1*	0.00032 *4*	^{155}Ho(48 m) - 240.19, 136.30, 45.38
9.156 *10*	0.151 *14*	^{171}Lu(8.24 d) - 739.78, 19.394, 667.404
9.156 *10*	0.16 *2*	^{171}Yb(5.25 ms) - 19.394, 75.878, 66.720
9.21 *3*		^{231}Th(25.52 h) - 25.646, 84.216, 89.944
9.21 *3*		^{231}U(4.2 d) - 25.646, 84.216, 217.940
9.21 *3*		^{235}Np(396.1 d) - 25.646, 84.216, 81.227
9.27 *7*		^{187}Au(8.4 m) - 1331.81, 1408.23, 914.73
9.3		^{154}Eu(46.3 m) - 68.1711, 100.8592, 35.8352
9.3 *1*		^{227}Ac(21.773 y) - 100, 69.21, 160.26
9.317 *10*	2.1 *calc*	^{101}Mo(14.61 m) - 590.10, 191.92, 1012.47
9.365 *12*	1.64 *24*	^{157}Eu(15.18 h) - 63.929, 410.723, 370.509
9.396 *7*		^{83}Br(2.40 h) - 529.635, 520.39, 552.63
9.396 *7*	4.90 *15*	^{83}Kr(1.83 h) - 32.1473
9.396 *7*		^{83}Rb(86.2 d) - 520.39, 529.635, 552.63
9.40 *8*	3.5×10^{-6}	^{102}Ag(7.7 m) - 556.41, 1834.7, 2054.5
9.40 *8*		^{102}Cd(5.5 m) - 481.0, 1036.1, 415.05
9.4	>0.14	^{140}Xe(13.60 s) - 805.52, 1413.66, 1315.05
9.5		^{214}Pb(26.8 m) - 351.932, 295.224, 241.997
9.52 *5*		^{204}Po(3.53 h) - 883.984, 270.068, 1016.31
9.53 *6*		^{185}W(1.67 m) - 65.86, 131.55, 173.68
9.56		^{191}Au(3.18 h) - 586.45, 277.88, 674.19
9.595 *9*	0.026 *3*	^{173}Hf(23.6 h) - 123.672, 296.974, 139.634
9.74 *5*	0.000119 *5*	^{163}Yb(11.05 m) - 860.28, 63.62, 123.21
9.746 *24*	~0.22	^{187}Ir(10.5 h) - 912.95, 427.12, 400.89
9.8		^{163}Er(75.0 m) - 1113.5, 436.1, 439.94

Energy	Intensity	Parent - Associated γ-rays
9.8		^{177}W(135 m) - 115.65, 426.98, 1036.4
9.82 *8*		^{81}Y(70.4 s) - 124.16, 79.23, 408.18
9.85 *4*	4.3 *12*	^{74}Kr(11.50 m) - 89.60, 203.0, 296.67
9.89 *13*		^{189}Hg(7.6 m) - 320.99, 78.21, 565.42
9.9		^{129}Sn(6.9 m) - 1161.31, 1128.44, 760.8
9.903 *16*		^{237}Am(73.0 m) - 280.23, 438.4, 473.5
10	0.49 *2*	^{148}Ho(9.59 s) - 1687.5, 660.8, 504.3
~10		^{162}Ho(67.0 m) - 185.005, 1220.0, 282.864
<10		^{173}W(7.6 m) - 457.68, 130.19, 174.8
<10		^{213}Ra(2.1 ms) - 214.7, 110.1, 104.6
10 *1*	0.0137 *14*	^{223}Ra(11.435 d) - 269.459, 154.21, 323.871
<10		^{234}Th(24.10 d) - 63.29, 92.38, 92.80
<10		^{234}Pa(1.17 m) - 73.92
10.1 *1*		^{169}Ho(4.7 m) - 788.4, 853.0, 760.8
10.20 *10*	4.3×10^{-5}	^{86}Y(48 m) - 627.21, 1153.01, 1076.64
10.25		^{231}Th(25.52 h) - 25.646, 84.216, 89.944
10.25		^{235}Np(396.1 d) - 25.646, 84.216, 81.227
10.3		^{157}Tm(3.63 m) - 455.00, 385.5, 348.40
10.4 *2*		^{199}Tl(7.42 h) - 455.46, 208.20597, 247.26
10.48 *5*	0.18 *6*	^{167}Yb(17.5 m) - 113.34, 106.18, 176.25
10.49 *4*	0.0049 *5*	^{155}Eu(4.7611 y) - 86.545, 105.305, 45.2972
10.49 *4*	0.015 *5*	^{155}Tb(5.32 d) - 86.545, 105.305, 180.103
10.53 *9*		^{205}Po(1.66 h) - 872.39, 1001.21, 849.83
10.54 *6*		^{107}Ru(3.75 m) - 194.05, 847.93, 462.61
10.6 *5*	0.8	^{137}Ce(9.0 h) - 447.15, 436.59, 433.22
10.6 *5*		^{137}Ce(34.4 h) - 824.82, 169.26, 762.3
10.6		^{221}Rn(25 m) - 216.90, 186.38, 150.04
10.6		^{225}Ac(10.0 d) - 99.91, 150.04, 99.63
10.68 *3*	9.7 *9*	^{100}Sr(202 ms) - 963.85, 898.50, 65.46
10.7		^{140}Eu(125 ms) - 174.8, 185.3, 59
10.7		^{237}Np(2.144×10^{6} y) - 29.374, 86.477, 94.66
10.836 *22*	0.263 *9*	^{206}Po(8.8 d) - 1032.26, 511.36, 286.410
10.836 *22*		^{210}At(8.1 h) - 82.802, 106, 167
10.85 *5*	0.70 *4*	^{138}Xe(14.08 m) - 258.411, 434.562, 1768.26
10.8630 *11*	0.004	^{124}Sb(20.2 m) - 25.981
10.8630 *11*	0.0030	^{124}Sb(93 s)
10.9 *5*		^{231}Pa(32760 y) - 27.36, 300.07, 302.65
10.9		^{247}Cf(3.11 h) - 294.1, 447.8, 417.9
11 *4*		^{196}Bi(240 s) - 1049.21, 371.93, 689.00
11 *4*		^{200}At(3.5 s) - 102.0, 158.3
11 *4*		^{200}At(47 s) - 102.0, 158.3
11		^{205}At(26.2 m) - 719.30, 669.41, 628.88
11		^{209}Rn(28.5 m) - 143.166, 154.198, 384.61
11.1 *3*		^{181}Au(11.4 s) - 148.0
11.1 *1*		^{225}Fr(4.0 m) - 182.3, 31.50, 225.1
11.1 *1*		^{229}Th(7340 y) - 193.509, 210.853, 86.40
11.17 *3*	1.31 *9*	^{160}Ho(3 s) - 118.44, 51.17, 107.28
11.2		^{191}Au(0.92 s) - 252.5, 240.9, 13.7
11.2		^{191}Hg(49 m) - 252.5, 196.3, 224.7
11.2		^{191}Hg(50.8 m) - 252.5, 420.1, 578.6
11.21		^{225}Fr(4.0 m) - 182.3, 31.50, 225.1

Energy	Intensity	Parent - Associated γ-rays
11.242 *7*	1.08 *6*	^{134}Cs(2.903 h) - 127.5021, 138.733
11.39 *2*		^{241}Pu(14.35 y) - 148.567, 103.680, 77.10
11.4 *1*	~0.07	^{161}Er(3.21 h) - 826.6, 211.15, 592.6
11.44 *6*		^{183}Au(42.0 s) - 161.18, 214.13, 313.08
11.51 *20*		^{184}Pt(17.3 m) - 154.90, 191.97, 548.36
11.60 *2*		^{165}Tm(30.06 h) - 242.917, 47.155, 297.369
11.6 *1*		^{165}Yb(9.9 m) - 80.11, 68.86, 1090.28
11.6 *3*		^{184}Pt(17.3 m) - 154.90, 191.97, 548.36
11.8	**>0.045**	^{172}Hf(1.87 y) - 23.9331, 125.812, 67.35
11.9		^{153}Sm(10.6 ms) - 32.9, 45.996, 57.94
11.90 *10*		^{153}Dy(6.4 h) - 80.723, 213.754, 99.659
11.9 *2*		^{173}Ta(3.14 h) - 172.2, 69.70, 90.3
12.12 *6*		^{204}At(9.2 m) - 684.341, 516.318, 426.253
12.2 *2*		^{200}At(43 s) - 665.9, 611.1, 484.5
12.23 *2*	0.174 *11*	^{146}Ce(13.52 m) - 316.74, 218.23, 264.56
12.31 *2*	0.018 *4*	^{169}Lu(34.06 h) - 960.622, 191.2137, 1449.74
12.327 *6*	1.53 *9*	^{133}Ba(38.9 h) - 632.56
12.327 *6*		^{133}La(3.912 h) - 278.835, 302.353, 290.06
12.385 *8*	0.0305 *18*	^{171}Er(7.516 h) - 308.31, 295.901, 111.621
12.4	3.0×10^{-6}	^{45}Ca(162.61 d)
12.4	0.158 *18*	^{45}Sc(318 ms)
12.4	2.8×10^{-5} *3*	^{45}Ti(184.8 m) - 720.22, 1408.6, 1662.4
12.4 *4*		^{183}Hg(9.4 s) - 1787.75, 305.14, 172.70
12.4 *5*		^{231}Pa(32760 y) - 27.36, 300.07, 302.65
12.41 *20*	~0.011	^{172}Hf(1.87 y) - 23.9331, 125.812, 67.35
12.5	†~0.3	^{148}Er(4.6 s) - 1653.4, 387.7, 197.1
12.5		^{227}Pa(38.3 m) - 64.62, 110.05, 84.8
12.5		^{171}Hf(12.1 h) - 122.0, 662.2, 347.18
12.598 *15*	0.29 *3*	^{152}Eu(96 m) - 89.8492, 18.265, 77.2583
12.634 *8*	0.658	^{193}Pt(4.33 d) - 135.50, 1.642
12.634 *8*		^{193}Au(17.65 h) - 186.17, 255.57, 268.22
12.634 *8*		^{193}Au(3.9 s) - 135.50, 1.642
12.70 *25*	0.010 *6*	^{155}Eu(4.7611 y) - 86.545, 105.305, 45.2972
12.7 *calc*	7.0×10^{-6}	^{178}Hf(31 y) - 426.383, 325.562, 574.215
12.7		^{227}Ac(21.773 y) - 100, 69.21, 160.26
12.75 *5*	0.30 *6*	^{228}Ra(5.75 y) - 13.52, 16.2, 15.5
12.79 *17*		^{183}Hg(9.4 s) - 1787.75, 305.14, 172.70
12.8		^{113}I(6.6 s) - 929.2, 857.3, 886.6
12.9	†<1.5	^{142}Xe(1.22 s) - 571.83, 657.05, 538.24
12.963 *2*		^{235}Pa(24.5 m) - 652.053, 659.3, 645.896
12.963 *2*		^{239}Pu(24110 y) - 51.624, 38.661, 129.297
<13		^{193}Tl(2.11 m) - 365.2
13.0		^{224}Ac(2.78 h) - 156.82, 140.7, 144.44
13.271 *18*		^{73}Ga(4.86 h) - 297.32, 325.70, 739.42
13.271 *18*	0.089 *calc*	^{73}Ge(0.499 s) - 53.440
13.271 *18*	0.089 *calc*	^{73}As(80.30 d) - 53.440
13.38	>0.00016	^{77}As(38.83 h) - 238.9963, 520.639, 249.7862
13.38		^{77}Br(57.036 h) - 238.9963, 520.639, 297.2151
13.47 *19*	7.1 *3*	^{155}Gd(31.97 ms) - 86.545, 21.036
13.49 *10*	21	^{101}Nb(7.1 s) - 276.10, 43.515, 157.466
13.5		^{154}Nd(25.9 s) - 151.703, 799.55, 180.693

Energy	Intensity	Parent - Associated γ-rays
13.52 *2*	1.6	^{228}Ra(5.75 y) - 16.2, 12.75, 15.5
13.53 *3*	~0.23	^{163}Yb(11.05 m) - 860.28, 63.62, 123.21
13.7 *6*		^{191}Au(0.92 s) - 252.5, 240.9, 11.2
13.7 *6*		^{191}Hg(49 m) - 252.5, 196.3, 224.7
13.7 *6*		^{191}Hg(50.8 m) - 252.5, 420.1, 578.6
13.8		^{144}Gd(4.5 m) - 333.3, 2432.6, 629.5
13.80 *25*	0.020 *6*	^{155}Eu(4.7611 y) - 86.545, 105.305, 45.2972
13.8		^{224}Pa(0.79 s) - 194.5, 40.7, 153.0
13.81 *2*	0.099 *4*	^{237}U(6.75 d) - 59.5412, 208.00, 26.3448
13.81 *2*		^{241}Am(432.2 y) - 59.5412, 26.3448, 33.1964
13.846 *15*	1.22 *17*	^{140}Ba(12.752 d) - 537.261, 29.9640, 162.660
13.9 *4*		^{169}Hf(3.24 m) - 492.86, 369.5, 123.5
13.9	0.15 *4*	^{177}W(135 m) - 115.65, 426.98, 1036.4
13.9		^{179}Ir(79 s) - 97.5, 86.31, 45.20
13.9 *6*		^{180}Yb(2.4 m) - 172.9, 375.2, 419.6
13.93 *5*	0.88 *8*	^{140}Xe(13.60 s) - 805.52, 1413.66, 1315.05
14.06383 *20*		^{153}Sm(46.284 h) - 103.18012, 69.67300, 97.43100
14.06383 *20*	0.018 *3*	^{153}Gd(240.4 d) - 97.43100, 103.18012, 69.67300
14.1 *1*		^{231}Pa(32760 y) - 27.36, 300.07, 302.65
14.16		^{177}Lu(160.4 d) - 413.6636, 319.0205, 121.6211
14.16		^{177}Hf(1.08 s) - 208.3664, 228.4838, 378.5029
14.22 *4*		^{169}Lu(34.06 h) - 960.622, 191.2137, 1449.74
14.23 *5*	3.6 *6*	^{157}Dy(21.6 ms) - 37.36, 86.55, 61.11
14.23 *5*	1.07 *16*	^{157}Ho(12.6 m) - 279.97, 341.16, 193.41
14.3	>0.12	^{119}Ag(2.1 s) - 626.4, 366.2, 399.1
14.3		^{166}Hf(6.77 m) - 78.76, 341.82, 407.91
14.4 *10*	0.0164 *14*	^{223}Ra(11.435 d) - 269.459, 154.21, 323.871
14.41300 *15*	10.56 *17*	^{57}Mn(85.4 s) - 122.0614, 692.03, 352.36
14.41300 *15*	9.16 *15*	^{57}Co(271.79 d) - 122.0614, 136.4743, 692.03
14.5		^{177}Ir(30 s) - 183.6, 148.3, 75.6
14.5 *3*		^{181}Au(11.4 s) - 148.0
14.5 *3*		^{185}Hg(49.1 s) - 94.00, 79.40
14.56 *2*		^{165}Tm(30.06 h) - 242.917, 47.155, 297.369
14.6 *3*		^{108}Ru(4.55 m) - 164.95, 150.46, 91.33
14.7		^{157}Eu(15.18 h) - 63.929, 410.723, 370.509
14.70 *6*		^{183}Ir(58 m) - 392.52, 228.70, 87.67
14.72 *2*		^{163}Tm(1.810 h) - 104.320, 69.229, 241.305
14.8846 *12*	0.0014 *7*	^{75}As(16.79 ms) - 279.5422, 303.9236, 24.3815
14.8846 *12*	0.0012 *6*	^{75}Se(119.779 d) - 264.6576, 136.0001, 279.5422
14.9 *3*	2.5×10^{-6} *4*	^{130}Cs(3.46 m) - 536.09, 470.8, 206.6
14.97 *2*		^{175}W(35.2 m) - 270.25, 166.69, 149.17
15.0	0.00247 *20*	^{223}Ac(2.10 m) - 98.58, 191.3, 83.55
15 *3*		^{223}Fr(21.8 m) - 50.13, 79.72, 234.81
15.15 *8*		^{228}Ra(5.75 y) - 13.52, 16.2, 12.75
15.2		^{185}Ir(14.4 h) - 254.4, 1828.8, 60.0
15.2 *1*		^{227}Ac(21.773 y) - 100, 69.21, 160.26
15.228 *2*	0.054 *3*	^{241}Cm(32.8 d) - 471.805, 430.634, 205.879
15.3		^{177}Re(14 m) - 196.85, 79.65, 84.3
15.4		^{159}Dy(144.4 d) - 58.00, 348.16, 79.45
15.4		^{161}Yb(4.2 m) - 78.20, 599.88, 631.45
15.5		^{100}Pd(3.63 d) - 84.02, 74.78, 126.05

Energy	Intensity	Parent - Associated γ-rays
15.5 *5*		^{231}Pa(32760 y) - 27.36, 300.07, 302.65
15.5 *2*	0.16 *3*	^{228}Ra(5.75 y) - 13.52, 16.2, 12.75
15.512 *10*		^{165}Tm(30.06 h) - 242.917, 47.155, 297.369
15.606 *15*	0.0013 *calc*	^{101}Mo(14.61 m) - 590.10, 191.92, 1012.47
15.6 *3*		^{122}Ba(1.95 m) - 550.7, 388.7, 231.0
15.7 *5*	0.7	^{147}Ba(0.893 s) - 167.4, 105.2, 196.1
15.93 *1*		^{188}Re(18.6 m) - 63.582, 105.87, 92.461
16.0 *1*	0.268 *13*	^{188}Hg(3.25 m) - 66.7, 190.1, 82.7
16.09 *5*	4.8 *4*	^{152}Nd(11.4 m) - 278.56, 250.15, 44.44
16.1		^{224}Ac(2.78 h) - 156.82, 140.7, 144.44
16.2 *4*		^{183}Pt(43 s) - 629.3, 316.7, 328.8
16.2 *1*	0.72 *8*	^{228}Ra(5.75 y) - 13.52, 12.75, 15.5
16.21 *3*	0.159 *20*	^{195}Hg(41.6 h) - 261.75, 560.27, 387.87
16.21 *3*	0.032 *4*	^{195}Tl(1.16 h) - 563.52, 884.47, 1363.88
16.23 *3*		^{246}Pu(10.84 d) - 43.81, 223.75, 179.94
16.263 *3*		^{182}Hf(61.5 m) - 344.1, 224.38, 506.60
16.263 *3*		^{182}Ta(15.84 m) - 171.580, 146.775, 184.953
16.263 *3*	0.0022	^{182}Ta(283 ms)
16.33 *5*	0.538 *16*	^{144}Ba(11.5 s) - 103.855, 430.48, 172.828
16.39 *10*		^{170}Hf(16.01 h) - 164.71, 620.7, 120.19
16.4 *3*	8.3 *17*	^{72}Zn(46.5 h) - 145.04, 191.96, 103.14
16.4 *3*	7.35	^{72}Ga(39.68 ms) - 103.14
16.4	0.007	^{153}Tb(2.34 d) - 212.0040, 109.7601, 102.2564
16.4 *3*		^{169}Hf(3.24 m) - 492.86, 369.5, 123.5
16.45 *16*	0.0063 *6*	^{187}W(23.72 h) - 685.774, 479.531, 72.001
16.5		^{151}Nd(12.44 m) - 116.80, 255.68, 1180.89
16.5 *1*	0.23	^{227}Ra(42.2 m) - 27.36, 300.07, 302.65
16.5 *1*	0.31 *9*	^{231}Pa(32760 y) - 27.36, 300.07, 302.65
16.70 *5*		^{161}Tm(33 m) - 45.54, 1648.1, 84.40
16.7 *3*	>0.012	^{167}Ho(3.1 h) - 346.547, 321.336, 237.873
16.7 *3*		^{167}Tm(9.25 d) - 207.801, 57.0723, 531.54
16.8 *1*		^{159}Er(36 m) - 624.5, 649.1, 205.92
16.8		^{233}Ac(145 s) - 522.757, 539.599
17.1	1.59 *16*	^{159}Eu(18.1 m) - 67.8, 78.6, 95.7
17.153 *6*	18 *6*	^{52}Ti(1.7 m) - 124.453, 7069.1, 6956.6
17.17 *3*		^{185}Hg(21.6 s) - 106, 159.42, 118.88
17.193 *4*		^{231}Th(25.52 h) - 25.646, 84.216, 89.944
17.193 *4*		^{231}U(4.2 d) - 25.646, 84.216, 217.940
17.193 *4*		^{235}Np(396.1 d) - 25.646, 84.216, 81.227
17.26	~0.004	^{233}Pa(26.967 d) - 312.17, 300.34, 340.81
17.3 *1*	0.231 *23*	^{79}Rb(22.9 m) - 688.1, 182.78, 143.41
17.3		^{154}Nd(25.9 s) - 151.703, 799.55, 180.693
17.3 *3*		^{169}Ho(4.7 m) - 788.4, 853.0, 760.8
17.36 *3*	†5.3 *29*	^{225}Fr(4.0 m) - 182.3, 31.50, 225.1
17.36 *3*	0.18 *9*	^{229}Th(7340 y) - 193.509, 210.853, 86.40
17.40 *5*		^{233}Th(22.3 m) - 86.477, 29.374, 459.222
17.40 *5*		^{237}Np(2.144×10^{6} y) - 29.374, 86.477, 94.66
17.62 *10*	0.32 *13*	^{121}Ag(0.78 s) - 314.55, 353.43, 500.61
17.7 *3*	4.4×10^{-5}	^{126}Sn(1×10^{5} y) - 87.57, 64.28, 86.94
17.7 *3*	4.55×10^{-5} *14*	^{126}Sb(19.15 m)
17.7 *3*	0.000325 *10*	^{126}Sb(11 s) - 22.70

8th Edition of the Table of Isotopes: 1999 Update - Energy-Ordered Gamma-Ray Table

Energy	Intensity	Parent - Associated γ-rays
17.78 *9*	0.042 *5*	^{113}Ag(5.37 h) - 298.60, 258.72, 316.21
17.78 *9*		^{113}Ag(68.7 s) - 316.21, 392.36, 298.60
18.0 *7*		^{192}Au(160 ms) - 59.8, 146.9, 128.9
18.04 *3*	0.12 *3*	^{182}Re(64.0 h) - 229.3207, 67.74970, 1121.3007
18.053 *4*	<0.33	^{231}Th(25.52 h) - 25.646, 84.216, 89.944
18.053 *4*		^{231}U(4.2 d) - 25.646, 84.216, 217.940
18.053 *4*		^{235}Np(396.1 d) - 25.646, 84.216, 81.227
18.09		^{133}Te(55.4 m) - 334.27
18.15 *5*		^{161}Tb(6.88 d) - 25.65150, 48.91562, 74.56711
18.15 *5*		^{161}Ho(2.48 h) - 25.65150, 103.062, 77.414
18.18 *3*	0.0043 *12*	^{197}Tl(2.84 h) - 425.84, 152.22, 1411.34
18.20 *5*	0.156	^{67}As(42.5 s) - 122.7, 120.8, 243.6
18.2 *5*		^{231}Pa(32760 y) - 27.36, 300.07, 302.65
18.265 *7*	1.26 *21*	^{152}Eu(96 m) - 89.8492, 77.2583, 12.598
18.27		^{136}La(114 ms) - 95.7, 33.5, 21.8
18.4 *1*	>0.4	^{105}Mo(35.6 s) - 85.4, 76.50, 147.8
18.4 *3*		^{184}Pt(17.3 m) - 154.90, 191.97, 548.36
18.4	0.014 *4*	^{228}Ac(6.15 h) - 911.204, 968.971, 338.320
18.4	0.34 *5*	^{228}Pa(22 h) - 911.204, 463.004, 968.971
18.430 *2*		^{239}Np(2.3565 d) - 106.125, 277.599, 228.183
18.430 *2*	~0.020	^{239}Am(11.9 h) - 49.10, 277.599, 228.183
18.430 *2*		^{243}Cm(29.1 y) - 277.599, 228.183, 209.753
18.5 *5*	27.2 *6*	^{112}Pd(21.03 h)
18.6		^{235}Th(7.1 m) - 417.0, 727.2, 696.1
18.7		^{177}Re(14 m) - 196.85, 79.65, 84.3
18.764 *2*	0.049 *12*	^{155}Eu(4.7611 y) - 86.545, 105.305, 45.2972
18.764 *2*	0.063 *4*	^{155}Tb(5.32 d) - 86.545, 105.305, 180.103
18.8	1.9	^{146}Tb(1.18 ms) - 417.7, 343.1, 205.2
18.90 *12*		^{161}Yb(4.2 m) - 78.20, 599.88, 631.45
19.0 *4*		^{189}Au(4.59 m) - 166.40, 320.2, 6.22
19	0.29	^{227}Ra(42.2 m) - 27.36, 300.07, 302.65
19	**0.37** *12*	^{231}Pa(32760 y) - 27.36, 300.07, 302.65
19.1 *1*	0.162 *14*	^{79}Rb(22.9 m) - 688.1, 182.78, 143.41
19.102 *15*	0.111 *18*	^{223}Fr(21.8 m) - 50.13, 79.72, 234.81
19.1		^{231}Th(25.52 h) - 25.646, 84.216, 89.944
19.1		^{231}U(4.2 d) - 25.646, 84.216, 217.940
19.38 *3*	0.00099 *22*	^{153}Tb(2.34 d) - 212.0040, 109.7601, 102.2564
19.394 *2*	13.7 *7*	^{171}Lu(8.24 d) - 739.78, 667.404, 75.878
19.394 *2*	14.8	^{171}Yb(5.25 ms) - 75.878, 66.720, 9.156
19.4 *1*		^{167}Lu(51.5 m) - 29.66, 239.22, 213.19
19.47 *13*	0.60	^{187}Au(2.3 s) - 101.04
19.47 *13*		^{187}Hg(1.9 m) - 233.38, 376.34, 240.26
19.5 *1*	0.177 *15*	^{152}Nd(11.4 m) - 278.56, 250.15, 44.44
19.595 *2*		^{231}Ac(7.5 m) - 282.471, 307.063, 221.399
19.595 *2*		^{235}U(7.038×10^{8} y) - 185.712, 143.764, 163.358
19.6 *2*	†6.0 *2*	^{181}Ir(4.90 m) - 107.64, 1639.6, 318.9
19.6		^{231}Pa(32760 y) - 27.36, 300.07, 302.65
19.62 *11*	0.0024 *calc*	^{181}Re(19.9 h) - 365.57, 360.70, 639.30
19.68 *2*		^{167}Lu(51.5 m) - 29.66, 239.22, 213.19
19.7 *3*	0.25 *8*	^{181}Au(11.4 s) - 148.0
19.77 *13*	†32 *9*	^{142}Xe(1.22 s) - 571.83, 657.05, 538.24

Energy	Intensity	Parent - Associated γ-rays
19.8 *4*	0.13	^{185}Au(4.25 m) - 310.6, 243.1, 77.7
19.81296 *19*		^{153}Sm(46.284 h) - 103.18012, 69.67300, 97.43100
19.81296 *19*		^{153}Gd(240.4 d) - 97.43100, 103.18012, 69.67300
19.86 *3*	0.036 *13*	^{182}Re(64.0 h) - 229.3207, 67.74970, 1121.3007
19.88 *15*	0.0201 *6*	^{125}Sb(2.7582 y) - 427.875, 600.600, 635.954
19.92 *1*	~0.0017	^{196}Au(9.6 h) - 147.81, 188.27, 168.37
19.94 *10*	0.045 *23*	^{172}Hf(1.87 y) - 23.9331, 125.812, 67.35
20.0		^{107}Mo(3.5 s) - 400.3, 65.7, 384.4
<20.0		^{128}Sb(10.4 m)
20.00 *5*	0.0085 *23*	^{132}Ce(3.51 h) - 182.11, 155.37, 216.83
20 *15*	†>0	^{240}Np(7.22 m)
20.02 *2*	0.010 *3*	^{234}Th(24.10 d) - 63.29, 92.38, 92.80
20.03 *8*		^{195}Ir(3.8 h) - 100
20.03 *8*		^{195}Pt(4.02 d) - 98.85, 129.70, 30.898
20.1	†100	^{180}Os(21.5 m) - 717.4, 667.0, 48.2
20.19 *3*	0.21 *4*	^{167}Lu(51.5 m) - 29.66, 239.22, 213.19
20.2 *4*	0.07 *3*	^{174}Ir(4.9 s) - 210.3, 190.2, 159.8
20.26 *9*	0.36	^{183}Os(13.0 h) - 381.768, 114.463, 167.844
20.3 *1*		^{173}Ta(3.14 h) - 172.2, 69.70, 90.3
20.30 *5*	0.8 *3*	^{223}Fr(21.8 m) - 50.13, 79.72, 234.81
20.30 *5*	0.18 *6*	^{227}Th(18.72 d) - 235.971, 50.13, 256.25
20.34 *2*		^{163}Tm(1.810 h) - 104.320, 69.229, 241.305
20.4		^{224}Ac(2.78 h) - 156.82, 140.7, 144.44
20.44 *2*	0.0082 *14*	^{169}Lu(34.06 h) - 960.622, 191.2137, 1449.74
20.50 *10*	1.8 *4*	^{102}Zr(2.9 s) - 599.60, 535.30, 64.50
20.559 *19*	1.6 *8*	^{105}Tc(7.6 m) - 143.26, 107.945, 321.50
20.71 *2*		^{165}Tm(30.06 h) - 242.917, 47.155, 297.369
20.752 *9*	0.190 *14*	^{169}Yb(32.026 d) - 63.12077, 197.95788, 177.21402
20.80 *8*	†135 *12*	^{142}Xe(1.22 s) - 571.83, 657.05, 538.24
20.86 *1*	0.404 *22*	^{133}Te(55.4 m) - 334.27
20.95 *5*		^{227}Th(18.72 d) - 235.971, 50.13, 256.25
21.005 *5*	0.014 *6*	^{155}Dy(9.9 h) - 226.918, 184.564, 1089.8
21.01 *12*	0.0078 *3*	^{179}Hf(25.05 d) - 453.43, 362.39, 122.793
21.036 *4*	0.00047 *4*	^{155}Eu(4.7611 y) - 86.545, 105.305, 45.2972
21.036 *4*	0.0375	^{155}Gd(31.97 ms) - 86.545, 13.47
21.036 *4*	~0.0016	^{155}Tb(5.32 d) - 86.545, 105.305, 180.103
21.1 *1*	0.067 *24*	^{227}Pa(38.3 m) - 64.62, 110.05, 84.8
21.16 *3*	0.0032 *14*	^{167}Lu(51.5 m) - 29.66, 239.22, 213.19
21.2	0.022 *4*	^{153}Gd(240.4 d) - 97.43100, 103.18012, 69.67300
21.36 *4*		^{195}Tl(1.16 h) - 563.52, 884.47, 1363.88
21.5	†3.3 *4*	^{148}Er(4.6 s) - 1653.4, 387.7, 197.1
21.542 *3*	0.031	^{151}Sm(90 y)
21.542 *3*	2.85 *12*	^{151}Gd(124 d) - 153.60, 243.282, 174.70
21.58 *2*	<0.017	^{229}Th(7340 y) - 193.509, 210.853, 86.40
21.6 *1*		^{117}I(2.22 m) - 325.9, 274.4, 661.5
21.6 *1*	10.3	^{117}Te(103 ms) - 274.4, X
21.65 *1*	1.26 *11*	^{126}Sn(1×10^{5} y) - 87.57, 64.28, 86.94
21.8 *2*	2.2 *19*	^{136}La(114 ms) - 95.7, 33.5, 71.8
21.8 *2*		^{203}Pb(0.48 s) - 838.6, 258.5, 873.84
21.87		^{237}Pu(45.2 d) - 280.40, 298.89, 320.75
22		^{62}Co(13.91 m)

Energy	Intensity	Parent - Associated γ-rays
~22		^{132}I(1.387 h) - 98.0
22.0 *4*		^{202}At(0.46 s) - 571.6, 677.3, 443.2
22.0 *4*		^{202}At(184 s) - 677.3, 617.8, 603.3
22		^{228}Pa(22 h) - 308.0, 29.8, 43.3
22.1 *2*	1.76 *10*	^{75}Kr(4.3 m) - 132.43, 154.66, 153.15
22.15 *5*	5.1×10^{-5} *10*	^{155}Ho(48 m) - 240.19, 136.30, 45.38
22.15 *5*	0.0109 *21*	^{155}Ho(48 m) - 240.19, 136.30, 45.38
22.2		^{171}Ta(23.3 m) - 49.6, 506.4, 501.8
22.2 *1*	0.035 *9*	^{173}Ta(3.14 h) - 172.2, 69.70, 90.3
22.3 *1*	0.13 *4*	^{227}Pa(38.3 m) - 64.62, 110.05, 84.8
22.32 *2*		^{163}Tm(1.810 h) - 104.320, 69.229, 241.305
22.33 *5*	1.56 *11*	^{66}Ge(2.26 h) - 43.81, 381.85, 272.97
22.48 *10*	†3 *1*	^{162}Hf(37.6 s) - 173.90, 196.34, 410.12
22.5 *5*	0.43 *14*	^{75}Zn(10.2 s) - 228.67, 432.29, 155.94
22.5		^{165}Ta(31.0 s) - 311.0, 199.4, 162.8
22.5 *2*		^{136}La(114 ms) - 95.7, 33.5, 21.8
22.510 *8*	>0.050	^{149}Pm(53.08 h) - 285.95, 859.46, 590.88
22.510 *8*	2.32 *6*	^{149}Eu(93.1 d) - 327.526, 277.089, 254.566
22.51 *10*	0.77 *6*	^{151}Pr(18.90 s) - 484.501, 880.1, 495.309
22.525 *6*	2.6 *5*	^{156}Sm(9.4 h) - 87.4897, 203.818, 165.8452
22.56 *8*	0.024 *calc*	^{205}Po(1.66 h) - 872.39, 1001.21, 849.83
22.6		^{237}Np(2.144×10^{6} y) - 29.374, 86.477, 94.66
22.70 *7*	0.100 *11*	^{126}Sn(1×10^{5} y) - 87.57, 64.28, 86.94
22.70 *7*	0.14 *2*	^{126}Sb(11 s) - 17.7
22.7 *10*	0.0045 *8*	^{134}Ce(3.16 d) - 162.306, 130.414, 300.884
22.7	0.0054 *16*	^{149}Nd(1.728 h) - 211.309, 114.314, 270.166
22.7		^{231}Pa(32760 y) - 27.36, 300.07, 302.65
22.78 *7*		^{165}Yb(9.9 m) - 80.11, 68.86, 1090.28
22.8 *2*	†<0.45	^{139}I(2.29 s) - 588.825, 483.700, 875.23
22.8 *3*	0.39 *13*	^{181}Au(11.4 s) - 148.0
22.85		^{166}Hf(6.77 m) - 78.76, 341.82, 407.91
22.88 *5*	0.011 *6*	^{146}Ce(13.52 m) - 316.74, 218.23, 264.56
22.92 *2*	3.1 *5*	^{151}Tb(25 s) - 379.39, 830.81, 522.77
22.92 *2*	3.00 *4*	^{151}Dy(17.9 m) - 386.10, 49.46, 546.31
23.0 *5*	†<2.6	^{106}Mo(8.4 s) - 465.70, 54.00, 618.60
23.001 *17*		^{251}Es(33 h) - 177.7, 152.8, 163.8
23.001 *17*	0.15 *3*	^{255}Fm(20.07 h) - 81.477, 58.477, 80.92
23.1 *1*	0.037 *6*	^{198}Tl(1.87 h) - 636.4, 411.80205, 587.2
23.1 *1*	0.081 *16*	^{198}Tl(32.1 ms) - 282.8, 198.8, 259.5
23.11 *5*		^{157}Ho(12.6 m) - 279.97, 341.16, 193.41
23.132 *29*	0.026 *7*	^{155}Dy(9.9 h) - 226.918, 184.564, 1089.8
23.28 *1*	6.4 *6*	^{126}Sn(1×10^{5} y) - 87.57, 64.28, 86.94
23.3 *2*	0.0024 *10*	^{228}Pa(22 h) - 308.0, 29.8, 43.3
23.39 *16*	22.7 *12*	^{157}Yb(38.6 s) - 242.05, 231.10, 164.49
23.4 *5*	†43 *18*	^{128}Ce(4.1 s) - 146.6, 104.1, 219.4
23.40 *5*		^{143}La(14.2 m) - 620.3, 643.75, 621.4
23.4		^{172}Hf(1.87 y) - 23.9331, 125.812, 67.35
23.438 *15*	0.48	^{71}Ge(20.40 ms) - 174.954
23.438 *15*	0.0185 *11*	^{71}As(65.28 h) - 174.954, 1095.490, 499.876
23.49 *2*		^{161}Tm(33 m) - 45.54, 1648.1, 84.40
23.5	1.81	^{176}Ta(1.1 ms) - 33.5, 46.0

Energy	Intensity	Parent - Associated γ-rays
23.53 *2*	0.24 *7*	^{208}Rn(24.35 m) - 426.78, 251.05, 350.026
23.53 *2*	0.16 *8*	^{212}Fr(20.0 m) - 124.2, 84.1, 71.7
23.54 *5*	0.13 *4*	^{185}Ta(49.4 m) - 177.59, 173.68, 65.86
23.54 *5*	0.17 *3*	^{185}W(1.67 m) - 65.86, 131.55, 173.68
23.54 *5*	0.0008 *3*	^{185}W(1.67 m) - 65.86, 131.55, 173.68
23.6 *1*	†~0.06	^{185}Hg(21.6 s) - 222.8, 258.7, 212.5
23.6	†1.1 *4*	^{225}Fr(4.0 m) - 182.3, 31.50, 225.1
23.6	**0.00123** *10*	^{229}Th(7340 y) - 193.509, 210.853, 86.40
23.6	**0.0048** *10*	^{231}Pa(32760 y) - 27.36, 300.07, 302.65
23.8 *2*	~3.9	^{116}Pd(11.8 s) - 114.7, 178.3, 101.1
23.870 *8*	16.0 *5*	^{119}In(2.4 m) - 763.14, 697.47, 1214.86
23.870 *8*		^{119}In(18.0 m) - 1065.55, 1249.71, 1163.85
23.870 *8*	16.1 *5*	^{119}Sn(293.1 d) - 25.271, 65.66
23.870 *8*	16.1 *5*	^{119}Sb(38.19 h)
23.9331 *2*	20.3 *11*	^{172}Hf(1.87 y) - 125.812, 67.35, 81.7513
23.95 *4*	†40 *12*	^{142}Xe(1.22 s) - 571.83, 657.05, 538.24
23.96 *5*		^{155}Dy(9.9 h) - 226.918, 184.564, 1089.8
23.96 *9*	~0.47	^{204}At(9.2 m) - 684.341, 516.318, 426.253
24.0 *5*	†0.7 *2*	^{185}Pt(33.0 m) - 229.60, 135.3, 197.4
24.1 *3*		^{142}Eu(1.22 m) - 768.1, 1023.3, 556.6
24.136 *23*	0.29 *5*	^{223}Fr(21.8 m) - 50.13, 79.72, 234.81
24.14 *10*		^{237}Np(2.144×10^{6} y) - 29.374, 86.477, 94.66
24.2 *5*	0.036 *6*	^{77}Kr(74.4 m) - 129.64, 146.59, 311.86
24.2 *1*	~0.10	^{127}Ba(1.9 s) - 56.2, 80.2
24.2 *1*		^{127}La(5.1 m) - 2271.6, 2057.9, 1881.0
24.20 *2*	3.76×10^{-4} *11*	^{169}Yb(46 s)
24.20 *2*		^{169}Lu(34.06 h) - 960.622, 191.2137, 1449.74
24.20 *4*	0.018 *8*	^{185}Ir(14.4 h) - 254.4, 1828.8, 60.0
24.28 *4*	>0.11	^{179}Re(19.5 m) - 430.221, 289.968, 1680.244
24.30 *5*		^{83}Nb(4.1 s) - 52.70
24.3		^{168}Hf(25.95 m) - 183.8, 157.2, 324.1
24.31 *3*	0.17 *5*	^{158}Er(2.29 h) - 71.91, 386.84, 248.58
24.3815 *14*	0.364 *16*	^{75}As(16.79 ms) - 279.5422, 303.9236, 80.9364
24.3815 *14*	0.0270 *12*	^{75}Se(119.779 d) - 264.6576, 136.0001, 279.5422
24.39 *1*	0.032 *9*	^{191}Au(3.18 h) - 586.45, 277.88, 674.19
24.46 *1*	3.90 *15*	^{101}Pd(8.47 h) - 296.29, 590.44, 269.67
24.5 *3*	0.029 *14*	^{147}Cs(0.225 s) - 85.2, 245.8, 109.7
24.5 *2*		^{227}Ac(21.773 y) - 100, 69.21, 160.26
24.56 *30*	0.008 *8*	^{155}Eu(4.7611 y) - 86.545, 105.305, 45.2972
24.595 *4*	>0.0029	^{140}La(1.6781 d) - 1596.210, 487.021, 815.772
24.6 *7*	0.13 *calc*	^{103}Ru(1.69 ms) - 210.64, 213.17, 2.70
24.6		^{224}Ac(2.78 h) - 156.82, 140.7, 144.44
24.61		^{229}Pa(1.50 d) - 40.09, 64.70, 75.12
24.63 *1*	0.09	^{167}Lu(51.5 m) - 29.66, 239.22, 213.19
24.7 *2*	~0.034	^{227}Ra(42.2 m) - 27.36, 300.07, 302.65
24.7 *2*	~0.005	^{231}Pa(32760 y) - 27.36, 300.07, 302.65
24.78 *15*		^{181}Pt(51 s) - 289.29, 111.97, 230.15
24.824 *15*		^{251}Es(33 h) - 177.7, 152.8, 163.8
24.824 *15*	0.09 *2*	^{255}Fm(20.07 h) - 81.477, 58.477, 80.92
24.889 *21*	0.0389 *12*	^{58}Co(9.04 h)
24.9 *2*	0.002 *1*	^{228}Pa(22 h) - 308.0, 29.8, 43.3

Energy	Intensity	Parent - Associated γ-rays
24.97 *11*	0.26 *6*	^{205}Po(1.66 h) - 872.39, 1001.21, 849.83
25.0 *5*	3.0 *6*	^{127}La(3.7 m) - 56.2
25.0 *5*		^{127}La(5.1 m) - 2271.6, 2057.9, 1881.0
<25		^{166}Tm(350 ms) - 34.418, 33.68, 74.920
25.1	0.03 *3*	^{109}Rh(80 s) - 326.868, 426.135, 178.034
25.1 *1*	0.110 *9*	^{152}Nd(11.4 m) - 278.56, 250.15, 44.44
25.1 *2*	30 *3*	^{120}Xe(40 m) - 72.6, 178.1, 762.5
25.1550 *5*		^{156}Sm(9.4 h) - 87.4897, 203.818, 165.8452
25.2		^{113}I(6.6 s) - 929.2, 857.3, 886.6
25.2 *3*		^{243}Pu(4.956 h) - 84.0, 41.8, 381.7
25.21 *6*	0.137 *13*	^{200}Pt(12.5 h) - 76.21, 135.90, 243.71
25.271 *1*	14.3 *3*	^{119}Sn(293.1 d) - 23.870, 65.66
25.318 *4*	0.00111 *17*	^{233}U(1.592×10^{5} y) - 42.44, 97.134, 54.699
25.39 *2*		^{225}Fr(4.0 m) - 182.3, 31.50, 225.1
25.39 *2*	0.008 *4*	^{229}Th(7340 y) - 193.509, 210.853, 86.40
25.4		^{147}Ce(56.4 s) - 268.80, 92.9, 374.23
25.4		^{233}U(1.592×10^{5} y) - 42.44, 97.134, 54.699
25.48 *2*	0.0042	^{105}Ag(7.23 m) - 319.14, 306.25, 442.37
25.48 *2*	0.0036 *calc*	^{105}Cd(55.5 m) - 961.84, 346.870, 1302.459
25.5		^{157}Tm(3.63 m) - 455.00, 385.5, 348.40
25.5 *2*	0.15 *3*	^{158}Er(2.29 h) - 71.91, 386.84, 248.58
25.51 *6*	0.117 *17*	^{231}Pa(32760 y) - 27.36, 300.07, 302.65
25.52 *7*	0.18 *calc*	^{187}Ir(10.5 h) - 912.95, 427.12, 400.89
25.54 *11*		^{187}Au(8.4 m) - 1331.81, 1408.23, 914.73
25.64 *6*	0.52 *8*	^{155}Sm(22.3 m) - 104.3346, 245.771, 141.4428
25.646 *4*	14.5 *3*	^{231}Th(25.52 h) - 84.216, 89.944, 81.227
25.646 *4*	12	^{231}U(4.2 d) - 84.216, 217.940, 58.570
25.646 *4*	0.00041 *5*	^{235}Np(396.1 d) - 84.216, 81.227, 58.570
25.65150 *7*	23.2 *10*	^{161}Tb(6.88 d) - 48.91562, 74.56711, 57.196
25.65150 *7*	27 *3*	^{161}Ho(2.48 h) - 103.062, 77.414, 59.235
25.70 *5*	0.14 *4*	^{173}Ta(3.14 h) - 172.2, 69.70, 90.3
25.71 *4*	0.0131 *4*	^{73}Se(39.8 m) - 67.03, 253.70, 84.0
25.71 *4*		^{73}Br(3.4 m) - 64.9, 336.0, 699.8
25.71 *1*	0.97 *7*	^{151}Pm(28.40 h) - 340.08, 167.75, 275.21
25.71 *12*		^{187}Au(8.4 m) - 1331.81, 1408.23, 914.73
25.717 *20*	0.0019 *7*	^{189}Re(24.3 h) - 216.663, 219.395, 245.09
25.717 *20*	0.024 *3*	^{189}Ir(13.2 d) - 245.09, 69.537, 59.053
25.83 *2*	0.045 *14*	^{167}Yb(17.5 m) - 113.34, 106.18, 176.25
25.981 *3*	0.003	^{124}Sb(20.2 m) - 10.8630
25.98 *2*	0.0076 *25*	^{167}Lu(51.5 m) - 29.66, 239.22, 213.19
26		^{223}Th(0.60 s) - 151.98, 97.10, 88.00
26.0 *1*		^{221}Rn(25 m) - 216.90, 186.38, 150.04
26.0 *1*	0.00164 *22*	^{225}Ac(10.0 d) - 99.91, 150.04, 99.63
26.0		^{231}Ac(7.5 m) - 282.471, 307.063, 221.399
26.04 *8*	0.034 *5*	^{183}Ir(58 m) - 392.52, 228.70, 87.67
26.05 *17*	5.4 *5*	^{157}Yb(38.6 s) - 23.39, 242.05, 231.10
26.07 *4*		^{157}Ho(12.6 m) - 279.97, 341.16, 193.41
26.0867 *24*	0.0033	^{122}Sb(4.191 m) - 61.4127, 76.0595
26.1		^{166}Hf(6.77 m) - 78.76, 341.82, 407.91
26.1 *5*	0.025 *6*	^{185}Hg(21.6 s) - 106, 159.42, 118.88
26.2	†43 *9*	^{131}Ce(10.2 m) - 169.42, 414.25, 119.18

Energy	Intensity	Parent - Associated γ-rays
26.2		^{131}Ce(5.0 m) - 230.43, 436.85, 462.9
26.220 *10*		^{205}Pb(5.54 ms) - 987.62, 703.44, 284.18
26.220 *10*	0.00137 *12*	^{205}Bi(15.31 d) - 1764.36, 703.44, 987.62
26.23 *2*	0.050 *11*	^{167}Lu(51.5 m) - 29.66, 239.22, 213.19
26.3 *1*	0.00010	^{190}Ir(1.2 h)
26.3 *1*	0.0072 *10*	^{228}Pa(22 h) - 308.0, 29.8, 43.3
26.34 *7*		^{201}Au(26 m) - 542.6, 517.0, 613.2
26.34 *7*	0.0086 *9*	^{201}Tl(72.912 h) - 167.43, 135.34, 32.19
26.3448 *2*	2.43 *6*	^{237}U(6.75 d) - 59.5412, 208.00, 164.61
26.3448 *2*	2.40 *2*	^{241}Am(432.2 y) - 59.5412, 33.1964, 43.423
26.3448 *2*	0.221 *7*	^{237}Pu(45.2 d) - 280.40, 298.89, 320.75
26.40 *15*	0.15 *6*	^{74}Kr(11.50 m) - 89.60, 203.0, 296.67
26.4 *1*		^{228}Ra(5.75 y) - 13.52, 16.2, 12.75
26.533 *6*	0.316 *12*	^{155}Eu(4.7611 y) - 86.545, 105.305, 45.2972
26.533 *6*	0.394 *13*	^{155}Tb(5.32 d) - 86.545, 105.305, 180.103
26.55 *5*	0.54 *3*	^{231}Th(25.52 h) - 25.646, 84.216, 89.944
26.6043 *14*	44.6 *5*	^{56}Cr(5.94 m) - 83.8990
26.6		^{104}Cd(57.7 m) - 83.7, 709.6, 559.1
26.6		^{241}Pu(14.35 y) - 148.567, 103.680, 77.10
26.65 *5*	0.217 *23*	^{132}Ce(3.51 h) - 182.11, 155.37, 216.83
26.9 *1*	2.48 *9*	^{119}Ag(2.1 s) - 626.4, 366.2, 399.1
26.9 *2*	32	^{154}Er(3.73 m)
26.9 *5*		^{194}Au(420 ms) - 170.78, 128.58, 137.16
26.9 *5*	0.0130 *16*	^{194}Au(600 ms) - 45.32, 35.19
27.0		^{231}Pa(32760 y) - 27.36, 300.07, 302.65
27.03		^{237}Pu(45.2 d) - 280.40, 298.89, 320.75
27.03		^{241}Am(432.2 y) - 59.5412, 26.3448, 33.1964
27.1 *1*		^{151}Tb(25 s) - 379.39, 830.81, 522.77
27.1 *1*		^{151}Dy(17.9 m) - 386.10, 49.46, 546.31
27.137 *10*	0.774 *14*	^{171}Lu(8.24 d) - 739.78, 19.394, 667.404
27.2		^{114}Te(15.2 m) - 90.29, 1896.77, 726.9
27.2		^{233}U(1.592×10^{5} y) - 42.44, 97.134, 54.699
27.268 *30*	0.066 *12*	^{223}Fr(21.8 m) - 50.13, 79.72, 234.81
27.3 *1*	4.5	^{145}Gd(85 s) - 329.9, 386.6, 716.0
27.3 *1*		^{145}Tb(29.5 s) - 257.8, 987.8, 537.0
27.3 *6*		^{192}Hg(4.85 h) - 274.8, 157.2, 306.5
27.33		^{114}Te(15.2 m) - 90.29, 1896.77, 726.9
27.36 *1*	16	^{227}Ra(42.2 m) - 300.07, 302.65, 283.69
27.36 *1*	10.3 *4*	^{231}Pa(32760 y) - 300.07, 302.65, 283.69
27.43 *5*	0.039 *12*	^{200}Pt(12.5 h) - 76.21, 135.90, 243.71
27.4815 *3*	0.9 *3*	^{154}Eu(46.3 m) - 68.1711, 100.8592, 35.8352
27.50 *2*	0.035 *17*	^{229}Th(7340 y) - 193.509, 210.853, 86.40
27.513 *14*	1.94 *14*	^{88}Kr(2.84 h) - 2392.11, 196.301, 2195.842
27.549 *9*	0.63 *13*	^{182}Os(22.10 h) - 510.056, 180.230, 263.285
27.56 *4*	1.29 *25*	^{103}Cd(7.3 m) - 1461.81, 1448.70, 1079.90
27.58 *2*	3.5 *4*	^{246}Pu(10.84 d) - 43.81, 223.75, 179.94
27.6 *2*		^{169}Ho(4.7 m) - 788.4, 853.0, 760.8
27.67 *1*	0.211 *23*	^{105}Cd(55.5 m) - 961.84, 346.870, 1302.459
27.8 *4*		^{185}Au(4.25 m) - 310.6, 243.1, 77.7
27.8 *4*	0.23 *5*	^{195}Ir(3.8 h) - 100
27.81 *5*	16.3 *16*	^{129}Te(69.6 m) - 459.60, 487.39, 278.43

Energy	Intensity	Parent - Associated γ-rays
27.81 *5*	0.0279 *19*	^{129}Te(33.6 d) - 695.88, 729.57, 556.65
27.879 *15*		^{165}Tm(30.06 h) - 242.917, 47.155, 297.369
27.92 *3*		^{161}Tm(33 m) - 45.54, 1648.1, 84.40
27.93 *3*	0.022 *4*	^{194}Ir(31.85 ms) - 112.230, 84.288, 62.793
28	>0.036	^{102}Cd(5.5 m) - 481.0, 1036.1, 415.05
28.0 *2*	3.5 *11*	^{108}Mo(1.09 s) - 268.3, 240.5, 372.4
28 *20*		^{160}Tm(74.5 s) - 264.1, 125.8, 375.8
28.0 *1*	0.60 *6*	^{224}Pa(0.79 s) - 194.5, 40.7, 153.0
28 *1*	0.7 *3*	^{245}Pu(10.5 h) - 327.428, 560.13, 308.222
28.18 *3*		^{161}Tm(33 m) - 45.54, 1648.1, 84.40
28.2		^{114}I(6.2 s) - 708.9, 682.5, 775.2
28.2		^{161}Er(3.21 h) - 826.6, 211.15, 592.6
28.242 *9*	1.13 *8*	^{166}Dy(81.6 h) - 82.471, 54.2400, 426.00
28.26 *11*	0.028 *10*	^{88}Kr(2.84 h) - 2392.11, 196.301, 2195.842
28.309 *5*	3.4 *5*	^{153}Pm(5.25 m) - 127.298, 35.842, 119.763
28.3 *1*	~0.002	^{228}Pa(22 h) - 308.0, 29.8, 43.3
28.375 *5*	0.11 *4*	^{233}Pa(26.967 d) - 312.17, 300.34, 340.81
28.375 *5*	0.0013 *5*	^{233}Np(36.2 m) - 312.17, 298.89, 546.9
28.38 *10*	0.20	^{170}Hf(16.01 h) - 164.71, 620.7, 120.19
28.40 *20*	~1.7	^{99}Zr(2.1 s) - 469.140, 546.13, 593.990
28.4		^{118}Pd(1.9 s) - 125.4, 125.4, 224.2
28.5 *1*	37 *4*	^{117}Xe(61 s) - 678.92
28.50 *10*	0.93 *9*	^{152}Nd(11.4 m) - 278.56, 250.15, 44.44
28.5		^{225}Rn(4.5 m) - 207.2, 178.7, 169.7
28.51 *7*		^{89}Br(4.348 s) - 775.28, 802.14, 868.57
28.51 *7*		^{90}Br(1.910 s) - 411.49, 962.71, 1097.82
28.6 *2*	0.00050	^{117}Ag(5.34 s)
28.7 *3*	0.34	^{154}Nd(25.9 s) - 151.703, 799.55, 180.693
28.7 *2*	0.018 *5*	^{158}Er(2.29 h) - 71.91, 386.84, 248.58
28.701 *12*	0.0365 *22*	^{161}Tb(6.88 d) - 25.65150, 48.91562, 74.56711
28.701 *12*		^{161}Ho(2.48 h) - 25.65150, 103.062, 77.414
28.8	~2.8	^{127}Pr(4.2 s) - 125.84, 29.56, 243.14
28.80 *4*	†230 *23*	^{169}Ta(4.9 m) - 511.0, 192.4, 153.5
28.8 *1*	0.0152 *24*	^{228}Pa(22 h) - 308.0, 29.8, 43.3
28.8182 *2*	1.1 *4*	^{154}Eu(46.3 m) - 68.1711, 100.8592, 35.8352
28.81 *3*		^{163}Tm(1.810 h) - 104.320, 69.229, 241.305
28.871 *9*		^{195}Ir(3.8 h) - 100
28.871 *9*	0.00130 *8*	^{195}Pt(4.02 d) - 98.85, 129.70, 30.898
28.88 *2*	0.007	^{167}Lu(51.5 m) - 29.66, 239.22, 213.19
28.9 *2*		^{104}Zr(1.2 s) - 100.9, 504.7, 445.0
28.9 *3*	0.14 *7*	^{147}Cs(0.225 s) - 85.2, 245.8, 109.7
28.9	1.0	^{190}Hg(20.0 m) - 142.6, 171.5, 154.7
28.99 *6*		^{204}Bi(11.22 h) - 899.15, 374.72, 984.02
29.0 *5*	0.00103 *3*	^{169}Lu(160 s)
29.0 *5*		^{169}Hf(3.24 m) - 492.86, 369.5, 123.5
29.0 *3*		^{187}Au(8.4 m) - 1331.81, 1408.23, 914.73
29 *2*		^{199}Tl(28.4 ms) - 366.90, 382.8, 353.39
29.02 *5*	0.030 *6*	^{241}Cm(32.8 d) - 471.805, 430.634, 205.879
29.10 *10*	21.6 *15*	^{86}Zr(16.5 h) - 242.80, 612.00, 135.6
29.192 *1*	†2.0 *10*	^{229}Ac(62.7 m) - 164.522, 569.1, 261.92
29.192 *1*	0.006 *3*	^{229}Pa(1.50 d) - 40.09, 64.70, 75.12

Energy	Intensity	Parent - Associated γ-rays
29.192 *1*	0.0120 *3*	^{233}U(1.592×10^{5} y) - 42.44, 97.134, 54.699
29.226 *19*	0.0060 *8*	^{187}W(23.72 h) - 685.774, 479.531, 72.001
29.26 *2*	0.057 *7*	^{161}Tm(33 m) - 45.54, 1648.1, 84.40
29.30 *5*	0.035 *2*	^{231}Th(25.52 h) - 25.646, 84.216, 89.944
29.31 *5*		^{165}Yb(9.9 m) - 80.11, 68.86, 1090.28
29.36		^{233}U(1.592×10^{5} y) - 42.44, 97.134, 54.699
29.37 *5*	0.0076 *21*	^{172}Er(49.3 h) - 610.062, 407.338, 68.107
29.374 *20*	2.5	^{233}Th(22.3 m) - 86.477, 459.222, 94.66
29.374 *20*	15.0 *10*	^{237}Np(2.144×10^{6} y) - 86.477, 94.66, 143.249
29.49 *5*	0.224 *9*	^{144}Ba(11.5 s) - 103.855, 430.48, 172.828
29.49 *2*	0.00158 *13*	^{234}Th(24.10 d) - 63.29, 92.38, 92.80
29.5 *10*		^{200}Bi(36.4 m) - 1026.5, 462.34, 419.70
29.56 *5*	23.8 *15*	^{127}Pr(4.2 s) - 125.84, 243.14, 431.38
29.6	>0.029	^{134}Te(41.8 m) - 767.20, 210.465, 277.951
29.60 *3*	~0.024	^{223}Fr(21.8 m) - 50.13, 79.72, 234.81
29.60 *3*	~0.0049	^{227}Th(18.72 d) - 235.971, 50.13, 256.25
29.6		^{237}Np(2.144×10^{6} y) - 29.374, 86.477, 94.66
29.66 *1*	14.4 *10*	^{167}Lu(51.5 m) - 239.22, 213.19, 1267.26
29.7 *1*	9.9 *11*	^{117}Cs(8.4 s) - 204.8, 205.6, 159.9
29.7 *5*	0.23 *7*	^{142}Tb(303 ms) - 211.6, 181.9, 68.5
29.715 *3*	0.0042 *21*	^{165}Dy(2.334 h) - 94.700, 361.68, 633.415
29.715 *3*	>0.006	^{165}Dy(1.257 m) - 515.467, 361.68, 153.803
29.8 *2*	1.09 *20*	^{118}Pd(1.9 s) - 125.4, 125.4, 224.2
29.8 *1*	0.056 *6*	^{228}Pa(22 h) - 308.0, 43.3, 316.8
29.85 *5*	0.100 *25*	^{143}Ba(14.33 s) - 211.475, 798.79, 980.45
29.86 *1*	0.054 *12*	^{223}Fr(21.8 m) - 50.13, 79.72, 234.81
29.86 *1*	0.09 *3*	^{227}Th(18.72 d) - 235.971, 50.13, 256.25
29.890 *6*	0.166 *8*	^{194}Ir(31.85 ms) - 112.230, 84.288, 62.793
29.9 *1*	3.1 *3*	^{156}Er(19.5 m) - 35.3, 133.6, 352.0
29.9 *2*		^{247}Cf(3.11 h) - 294.1, 447.8, 417.9
29.9640 *7*	14.1 *4*	^{140}Ba(12.752 d) - 537.261, 162.660, 304.849
29.96 *2*	0.032	^{227}Ra(42.2 m) - 27.36, 300.07, 302.65
29.96 *2*	0.109 *7*	^{231}Pa(32760 y) - 27.36, 300.07, 302.65
29.97 *10*	0.09 *3*	^{151}Pr(18.90 s) - 484.501, 880.1, 495.309
30.00 *3*	0.017 *4*	^{149}Nd(1.728 h) - 211.309, 114.314, 270.166
30.0 *2*		^{229}Pa(1.50 d) - 40.09, 64.70, 75.12
30.037 *3*	0.000217 *6*	^{239}Pu(24110 y) - 51.624, 38.661, 129.297
30.1 *5*	0.08 *8*	^{117}I(2.22 m) - 325.9, 274.4, 661.5
30.106 *8*		^{165}Tm(30.06 h) - 242.917, 47.155, 297.369
30.2		^{161}Er(3.21 h) - 826.6, 211.15, 592.6
30.3 *1*		^{121}Cs(122 s) - 179.4, 196.0, 459.7
30.3 *1*	†<0.28	^{225}Fr(4.0 m) - 182.3, 31.50, 225.1
30.3 *1*	>0.041	^{229}Th(7340 y) - 193.509, 210.853, 86.40
30.3		^{229}Th(7340 y) - 193.509, 210.853, 86.40
30.332 *8*		^{108}Ag(418 y) - 722.907, 433.937, 614.276
30.4 *1*	0.021 *9*	^{185}Ir(14.4 h) - 254.4, 1828.8, 60.0
30.40 *1*	0.27 *calc*	^{191}Au(3.18 h) - 586.45, 277.88, 674.19
30.427 *13*	0.133 *5*	^{159}Ho(33.05 m) - 121.012, 131.973, 309.594
30.45 *5*	0.063 *7*	^{177}W(135 m) - 115.65, 426.98, 1036.4
30.5 *5*	0.56 *4*	^{155}Sm(22.3 m) - 104.3346, 245.771, 141.4428
30.6 *5*		^{123}Cs(1.64 s) - 94.6, 64.0, 61.7

8th Edition of the Table of Isotopes: 1999 Update - Energy-Ordered Gamma-Ray Table

Energy	Intensity	Parent - Associated γ-rays
30.6 *5*	†56 *6*	^{123}Ba(2.7 m) - 94.6, 123.5, 116.1
30.6 *3*	0.029 *5*	^{181}Au(11.4 s) - 148.0
30.60 *3*	~0.08	^{201}Au(26 m) - 542.6, 517.0, 613.2
30.60 *3*	0.253 *5*	^{201}Tl(72.912 h) - 167.43, 135.34, 32.19
30.6 *1*		^{228}Ra(5.75 y) - 13.52, 16.2, 12.75
30.6383 *11*	95 *1*	^{28}Mg(20.91 h) - 1342.27, 941.72, 400.56
30.7 *2*	†39 *8*	^{114}Cs(0.57 s) - 449.7, 1147.4, 758.2
30.70 *9*	19	^{179}W(37.05 m) - 133.84
30.71 *1*	0.21	^{196}Au(9.6 h) - 147.81, 188.27, 168.37
30.77 *2*		^{93}Zr(1.53×10^{6} y)
30.77 *2*	0.0006	^{93}Nb(16.13 y)
30.77 *2*		^{93}Mo(4.0×10^{3} y)
30.8 *3*	0.034	^{154}Nd(25.9 s) - 151.703, 799.55, 180.693
30.8 *2*	>0.027	^{158}Er(2.29 h) - 71.91, 386.84, 248.58
30.80 *10*	1.5 *3*	^{165}Yb(9.9 m) - 80.11, 68.86, 1090.28
30.8 *2*	†13 *2*	^{181}Hg(3.6 s) - 1986.7, 223.2, 185.0
30.8 *1*	0.076 *18*	^{198}Pb(2.40 h) - 290.3, 365.4, 173.4
30.814 *18*		^{189}Re(24.3 h) - 216.663, 219.395, 245.09
30.814 *18*	0.00031	^{189}Os(5.8 h)
30.814 *18*		^{189}Ir(13.2 d) - 245.09, 69.537, 59.053
30.84 *5*		^{249}Cm(64.15 m) - 634.31, 560.45, 368.76
30.84 *5*	~0.007	^{253}Es(20.47 d) - 41.79, 389.11, 387.1
30.898 *4*	1.3 *calc*	^{195}Ir(2.5 h) - 98.85, 211.407, 129.70
30.898 *4*	1.8 *calc*	^{195}Ir(3.8 h) - 98.85, 684.88, 432.86
30.898 *4*	2.28 *15*	^{195}Pt(4.02 d) - 98.85, 129.70, 129.5
30.898 *4*	0.75 *3*	^{195}Au(186.09 d) - 98.85, 129.70, 211.407
31.00 *5*	0.010 *3*	^{231}Pa(32760 y) - 27.36, 300.07, 302.65
31.04 *11*	0.017 *7*	^{181}Re(19.9 h) - 365.57, 360.70, 639.30
31.07 *7*	0.16 *4*	^{157}Sm(482 s) - 197.870, 196.461, 394.351
31.10 *5*		^{225}Fr(4.0 m) - 182.3, 31.50, 225.1
31.10 *5*	0.84 *8*	^{229}Th(7340 y) - 193.509, 210.853, 86.40
31.131 *2*	0.065 *7*	^{239}U(23.45 m) - 74.664, 43.533, 662.24
31.131 *2*	0.072 *5*	^{243}Am(7370 y) - 74.664, 43.533, 117.84
31.2 *2*		^{171}Hf(12.1 h) - 122.0, 662.2, 347.18
31.3		^{231}Ac(7.5 m) - 282.471, 307.063, 221.399
31.378 *8*	0.500 *11*	^{159}Ho(33.05 m) - 121.012, 131.973, 309.594
31.4 *4*	†25 *6*	^{164}Hf(111 s) - 122.1, 153.3, 313.7
31.4 *4*	0.017 *8*	^{174}Ir(9 s) - 193.5, 224.6
31.4		^{241}Am(432.2 y) - 59.5412, 26.3448, 33.1964
31.444 *7*	0.0071 *15*	^{155}Eu(4.7611 y) - 86.545, 105.305, 45.2972
31.444 *7*	0.022 *5*	^{155}Tb(5.32 d) - 86.545, 105.305, 180.103
31.5 *3*	0.0036 *4*	^{130}Cs(3.46 m) - 536.09, 470.8, 206.6
31.5 *1*	†5.3 *7*	^{155}Tm(21.6 s) - 226.8, 531.7, 88.1
31.50 *5*	†91 *16*	^{225}Fr(4.0 m) - 182.3, 225.1, 75.1
31.50 *5*	1.19 *4*	^{229}Th(7340 y) - 193.509, 210.853, 86.40
31.5		^{236}Th(37.5 m) - 110.8, 646.6, 196.0
31.52 *4*		^{107}Ru(3.75 m) - 194.05, 847.93, 462.61
31.52 *4*	0.00025 *4*	^{233}U(1.592×10^{5} y) - 42.44, 97.134, 54.699
31.54 *5*	0.0070 *24*	^{231}Pa(32760 y) - 27.36, 300.07, 302.65
31.58 *14*		^{187}Au(8.4 m) - 1331.81, 1408.23, 914.73
31.58 *1*		^{223}Fr(21.8 m) - 50.13, 79.72, 234.81

Energy	Intensity	Parent - Associated γ-rays
31.58 *1*	0.076 *18*	^{227}Th(18.72 d) - 235.971, 50.13, 256.25
31.6 *2*		^{171}Hf(12.1 h) - 122.0, 662.2, 347.18
31.6		^{180}Os(21.5 m) - 20.1, 717.4, 667.0
31.60 *5*	0.016 *5*	^{235}U(7.038×10^{8} y) - 185.712, 143.764, 163.358
31.61 *5*	1.8 *4*	^{192}Hg(4.85 h) - 274.8, 157.2, 306.5
31.61 *5*		^{192}Au(29 ms) - 103.8, 62.8, 41.0
31.61 *5*		^{192}Au(160 ms) - 59.8, 146.9, 128.9
31.67 *3*	0.45 *5*	^{151}Nd(12.44 m) - 116.80, 255.68, 1180.89
31.7 *2*	†8 *1*	^{139}I(2.29 s) - 588.825, 483.700, 875.23
31.7 *1*	†0.17 *5*	^{155}Er(5.3 m) - 110.12, 241.5, 234.0
31.7 *calc*		^{251}Fm(5.30 h) - 425.4, 480.4, 358.3
31.7377 *5*	0.486 *7*	^{182}Ta(114.43 d) - 67.74970, 1121.3007, 1221.4066
31.7377 *5*	0.452 *10*	^{182}Re(12.7 h) - 67.74970, 1121.3007, 1221.4066
31.7377 *5*	0.26 *5*	^{182}Re(64.0 h) - 229.3207, 67.74970, 1121.3007
31.7783 *4*	5.6 *11*	^{154}Eu(46.3 m) - 68.1711, 100.8592, 35.8352
31.78 *5*	0.22 *4*	^{157}Sm(482 s) - 197.870, 196.461, 394.351
31.80 *3*	0.46 *3*	^{109}Ru(34.5 s) - 206.29, 225.98, 1929.05
31.8 *1*		^{208}Po(2.898 y) - 291.7, 570.4, 601.6
31.84 *20*	0.00058 *5*	^{104}Rh(4.34 m) - 51.422, 97.099, 77.548
31.85 *13*	0.0125 *21*	^{183}Ir(58 m) - 392.52, 228.70, 87.67
31.89 *10*	0.058 *13*	^{134}Ce(3.16 d) - 162.306, 130.414, 300.884
31.99 *3*	~1.0×10^{-4}	^{223}Ra(11.435 d) - 269.459, 154.21, 323.871
32 *2*		^{199}Pt(13.6 s) - 391.93
32.05 *3*	1.92 *9*	^{70}Se(41.1 m) - 49.51, 426.15, 376.65
32.1 *2*	4.01 *24*	^{128}Sn(59.07 m) - 482.3, 75.1, 557.3
32.1473 *16*		^{83}Br(2.40 h) - 529.635, 520.39, 552.63
32.1473 *16*	0.0549 *15*	^{83}Kr(1.83 h) - 9.396
32.1473 *16*		^{83}Rb(86.2 d) - 520.39, 529.635, 552.63
32.183	**0.0174** *4*	^{241}Am(432.2 y) - 59.5412, 26.3448, 33.1964
32.19 *3*	~0.09	^{201}Au(26 m) - 542.6, 517.0, 613.2
32.19 *3*	0.258 *5*	^{201}Tl(72.912 h) - 167.43, 135.34, 30.60
32.20 *1*	6.30 *21*	^{153}Nd(31.6 s) - 418.34, 1965.58, 105.47
32.2	>0.11	^{179}Re(19.5 m) - 430.221, 289.968, 1680.244
32.21 *2*		^{193}Au(3.9 s) - 135.50, 12.634, 1.642
32.21 *2*		^{193}Hg(3.80 h) - 381.60, 861.11, 257.99
32.21 *2*		^{193}Hg(11.8 h) - 257.99, 407.63, 573.25
32.3 *1*	7.6 *8*	^{117}Xe(61 s) - 678.92
32.3 *3*	†~100	^{179}Os(6.5 m) - 65.39, 218.6, 593.8
32.3		^{148}Ho(2.35 ms) - 373.1, 321.3, 180.2
32.35 *10*	0.07	^{170}Hf(16.01 h) - 164.71, 620.7, 120.19
32.4 *2*	†1.6 *4*	^{229}Ac(62.7 m) - 164.522, 569.1, 261.92
32.4 *2*	0.00091 *14*	^{233}U(1.592×10^{5} y) - 42.44, 97.134, 54.699
32.45 *10*	25.2	^{142}Pm(2.0 ms) - 433.7, 203.5, 208.5
32.46 *2*	0.0048 *5*	^{107}Cd(6.50 h) - 93.124, 828.93, 796.462
32.46		^{237}Np(2.144×10^{6} y) - 29.374, 86.477, 94.66
32.532 *19*	0.0095 *5*	^{206}Po(8.8 d) - 1032.26, 511.36, 286.410
32.6 *1*	~0.034	^{186}Pt(2.2 h) - 689.4, 611.5, 210.4
32.6		^{251}Cm(16.8 m) - 542.7, 530.0, 389.7
32.639 *3*	0.21 *3*	^{241}Cm(32.8 d) - 471.805, 430.634, 205.879
32.639 *3*		^{245}Bk(4.94 d) - 205.879, 471.805, 164.8
32.70 *2*	8	^{100}Rh(4.6 m) - 74.78, 42.10

Energy	Intensity	Parent - Associated γ-rays
32.70 *2*	2.55 *16*	^{100}Pd(3.63 d) - 84.02, 74.78, 126.05
32.700 *4*	0.074 *7*	^{154}Eu(46.3 m) - 68.1711, 100.8592, 35.8352
32.73 *5*	0.073 *4*	^{231}Th(25.52 h) - 25.646, 84.216, 89.944
32.75 *2*		^{200}Pb(21.5 h) - 147.63, 257.17, 235.63
32.9 *1*	49.5 *20*	^{153}Sm(10.6 ms) - 45.996, 57.94, 53.534
32.9		^{237}Pu(45.2 d) - 280.40, 298.89, 320.75
~33		^{124}Ba(11.0 m) - 169.5, 189.0, 1216.7
33.0 *1*		^{139}Sm(2.57 m) - 273.7, 306.7, 596.3
33.0	†<0.3	^{142}Xe(1.22 s) - 571.83, 657.05, 538.24
33.1		^{235}Th(7.1 m) - 417.0, 727.2, 696.1
33.1964 *3*	0.130 *5*	^{237}U(6.75 d) - 59.5412, 208.00, 26.3448
33.1964 *3*	0.0745 *23*	^{237}Pu(45.2 d) - 59.5412, 26.3448, 43.423
33.1964 *3*	0.126 *3*	^{241}Am(432.2 y) - 59.5412, 26.3448, 43.423
33.3 *2*	0.08 *3*	^{153}Nd(31.6 s) - 418.34, 32.20, 1965.58
33.32 *5*	0.030 *2*	^{231}Th(25.52 h) - 25.646, 84.216, 89.944
33.335 *19*	0.000149 *16*	^{189}Re(24.3 h) - 216.663, 219.395, 245.09
33.335 *19*	0.0068 *8*	^{189}Ir(13.2 d) - 245.09, 69.537, 59.053
33.40 *8*	~0.012	^{227}Th(18.72 d) - 235.971, 50.13, 256.25
33.46	0.290 *25*	^{143}Cs(1.78 s) - 195.554, 232.421, 306.424
33.5 *2*	39 *14*	^{136}La(114 ms) - 95.7, 21.8, 71.8
33.50 *3*	0.013 *9*	^{167}Lu(51.5 m) - 29.66, 239.22, 213.19
33.5	41.7	^{176}Ta(1.1 ms) - 46.0, 23.5
33.54		^{133}Ce(4.9 h) - 477.22, 510.36, 58.39
33.568 *10*	0.200 *22*	^{144}Ce(284.893 d) - 133.515, 80.120, 40.98
33.58	†0.67	^{176}W(2.5 h) - 100.20, 94.86, 61.29
33.6		^{192}Bi(39.6 s) - 268.8, 103.1
33.6 *8*	0.54 *5*	^{194}Au(420 ms) - 170.78, 128.58, 137.16
33.6 *5*	0.10 *3*	^{223}Ra(11.435 d) - 269.459, 154.21, 323.871
33.68 *7*	14 *calc*	^{166}Tm(350 ms) - 34.418, 74.920, 41.29
33.7 *1*	2.3 *5*	^{117}Cs(8.4 s) - 204.8, 29.7, 205.6
33.7 *3*		^{196}Tl(1.41 h) - 426.0, 635.5, 695.6
33.8 *2*	0.33	^{154}Nd(25.9 s) - 151.703, 799.55, 180.693
33.8 *3*	0.0011 *4*	^{181}Os(105 m) - 238.75, 826.77, 118.03
33.85 *5*	0.013 *6*	^{185}Ir(14.4 h) - 254.4, 1828.8, 60.0
33.9 *2*		^{177}Re(14 m) - 196.85, 79.65, 84.3
33.91 *2*	3.2 *3*	^{167}Lu(51.5 m) - 29.66, 239.22, 213.19
34.0 *4*	†6.4 *4*	^{172}W(6.6 m) - 38.9, 423.3, 89.8
34 *5*		^{211}Po(25.2 s) - 897.80, 1063.662, 569.702
34.0		^{231}Pa(32760 y) - 27.36, 300.07, 302.65
34		^{232}Pa(1.31 d) - 969.315, 894.351, 150.059
~34		^{243}Pu(4.956 h) - 84.0, 41.8, 381.7
34.0		^{251}Bk(55.6 m) - 177.7, 130.1, 152.8
34.0		^{251}Es(33 h) - 177.7, 152.8, 163.8
34.0		^{255}Fm(20.07 h) - 81.477, 58.477, 80.92
34.18 *10*	1.30 *21*	^{160}Yb(4.8 m) - 173.74, 215.78, 140.35
34.20 *5*	0.025	^{96}Tc(51.5 m) - 778.224, 1200.231, 480.705
34.23 *10*	0.23 *4*	^{235}Pu(25.3 m) - 49.10, 756.4, 910.1
34.30 *4*		^{234}Pa(6.70 h) - 131.30, 946.00, 883.24
34.325 *5*		^{250}Bk(3.217 h) - 989.12, 1031.85, 1028.65
34.325 *5*	~0.06	^{250}Es(8.6 h) - 828.82, 303.41, 349.4
34.37	0.00046	^{166}Lu(1.41 m) - 228.12, 102.38, 285.07

Energy	Intensity	Parent - Associated γ-rays
34.37		^{166}Hf(6.77 m) - 78.76, 341.82, 407.91
34.4		^{233}Pu(20.9 m) - 235.4, 534.8, 500.3
34.4 *1*		^{254}Es(275.7 d) - 63.0, 316, 304
34.4 *1*		^{254}Es(39.3 h) - 211.80, 177.30, 71.30
34.418 *1*	46.7	^{166}Tm(350 ms) - 33.68, 74.920, 41.29
34.5		^{114}Ag(1.50 ms) - 73.1, 47.4, 43.9
34.52 *3*	1.63 *13*	^{135}Ce(17.7 h) - 265.56, 300.07, 606.76
34.6 *3*	†10.8 *4*	^{117}Rh(0.44 s) - 131.8, 97.1, 481.6
34.6 *3*	10.8 *12*	^{117}Pd(19.1 ms) - 168.6, 97.1, 131.8
34.6	**>0.011**	^{172}Hf(1.87 y) - 23.9331, 125.812, 67.35
34.6 *1*	0.036 *4*	^{228}Pa(22 h) - 308.0, 29.8, 43.3
34.6 *2*	0.0070 *20*	^{220}Fr(27.4 s) - 413.0, 234.5, 178.4
34.7 *1*	~0.037	^{235}U(7.038×10^{8} y) - 185.712, 143.764, 163.358
34.71 *5*	0.36 *4*	^{132}Ce(3.51 h) - 182.11, 155.37, 216.83
34.76		^{246}Am(25.0 m) - 1078.86, 798.80, 1062.04
34.76		^{246}Bk(1.80 d) - 798.80, 1081.40, 833.60
34.79 *4*		^{169}Lu(34.06 h) - 960.622, 191.2137, 1449.74
34.8 *16*		^{226}Ra(1600 y) - 186.211, 262.27, 600.66
34.8 *1*	0.0024	^{229}Pa(1.50 d) - 40.09, 64.70, 75.12
34.8	0.0024	^{229}Pa(1.50 d) - 40.09, 64.70, 75.12
34.84 *2*	0.0241 *17*	^{194}Ir(31.85 ms) - 112.230, 84.288, 62.793
34.9 *3*	0.33 *5*	^{113}Rh(2.80 s) - 348.9, 189.7, 409.3
34.9 *3*	0.039 *8*	^{127}Sn(2.10 h) - 1114.3, 1095.6, 823.1
34.9		^{161}Er(3.21 h) - 826.6, 211.15, 592.6
34.9 *3*	~0.2	^{220}Ac(26.4 ms) - 133.3, 92.8, 342.7
34.954 *18*	0.0168 *10*	^{206}Bi(6.243 d) - 803.10, 881.01, 516.18
34.991 *55*	0.0045 *21*	^{223}Fr(21.8 m) - 50.13, 79.72, 234.81
35 *7*		^{187}Tl(15.60 s) - 161
35 *7*		^{187}Pb(18.3 s) - 393.4, 331.4, 343.5
35.05 *8*	1.12 *6*	^{146}Ce(13.52 m) - 316.74, 218.23, 264.56
35.05 *3*		^{163}Tm(1.810 h) - 104.320, 69.229, 241.305
35.05	>0.11	^{179}Re(19.5 m) - 430.221, 289.968, 1680.244
35.1 *3*	0.14 *7*	^{147}Cs(0.225 s) - 85.2, 245.8, 109.7
35.13 *1*	0.034 *25*	^{151}Pm(28.40 h) - 340.08, 167.75, 275.21
35.19 *7*		^{194}Au(420 ms) - 170.78, 128.58, 137.16
35.19 *7*	2.27 *22*	^{194}Au(600 ms) - 45.32, 26.9
35.2 *4*		^{129}In(0.61 s) - 2118.0, 1865.0, 769.3
35.2 *2*	0.045 *15*	^{140}Sm(14.82 m) - 225.4, 140.0, 341.3
35.2 *2*	0.54 *18*	^{157}Yb(38.6 s) - 23.39, 242.05, 231.10
35.2		^{157}Lu(4.79 s) - 967.5, 949.8, 880.5
35.227 *2*	1.19 *12*	^{151}Pr(18.90 s) - 484.501, 880.1, 495.309
35.280 *18*		^{165}Tm(30.06 h) - 242.917, 47.155, 297.369
35.3 *1*	18	^{156}Er(19.5 m) - 29.9, 133.6, 352.0
35.34 *10*	1.30 *16*	^{109}Rh(80 s) - 326.868, 426.135, 178.034
35.42 *8*	14.1 *11*	^{174}W(31 m) - 428.83, 328.68, 378.54
35.4919 *5*	4.29 *12*	^{125}Sb(2.7582 y) - 427.875, 600.600, 635.954
35.4919 *5*	6.67 *20*	^{125}Te(57.40 d) - 109.276, 144.780
35.4919 *5*	6.68 *13*	^{125}I(59.408 d)
35.50 *10*	19.3 *13*	^{83}Y(7.08 m) - 882.1, 489.90, 858.70
35.5 *1*		^{254}Es(275.7 d) - 63.0, 316, 304
35.5 *1*		^{254}Es(39.3 h) - 211.80, 177.30, 71.30