^{138}I β^- decay 1992Co26,1979Ho21

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 146, 1 (2017)	30-Sep-2017

Parent: ^{138}I: E=0.0; J^π=(1$^-$); $T_{1/2}$=6.26 s *3*; Q(β^-)=7992 *7*; %β^- decay=100.0

^{138}I-J^π,$T_{1/2}$: From Adopted Levels of ^{138}I.

^{138}I-Q(β^-): From 2017Wa10.

1992Co26: Source of ^{138}I was produced by fission of ^{235}U. Fission fragments were separated by the OSTIS mass separator at the Institute Laue Langevin, France. γ rays were detected with 4 Ge detectors. Measured Eγ, Iγ, $\gamma\gamma$-coin, $\gamma\gamma(\theta)$. Deduced levels, J, π, decay branching ratios.

1979Ho21: source of ^{138}I was produced from fission of ^{235}U material deposited on a graphite cloth. Fission fragments were separated by the OSIRIS isotope separator at the R2-0 reactor in Studsvik. γrays were detected with coaxial Ge(Li) detectors. Measured Eγ, Iγ, $\gamma\gamma$-coin. Deduced levels, J, π, decay branching ratios. Systematics of neighboring isotones.

1975Kr17,1976We20,1981Ho07: measured Eγ, Iγ, $\gamma\gamma$-coin.

1976AlYV: measured $\beta\gamma$.

Others: 1970Lu05, 1974NoZR, 2011Ta26.

Level scheme is from 1992Co26 and 1979Ho21, unless otherwise noted. Due to a large gap (>2 MeV) between the highest observed level and the Q-value, the decay scheme could be incomplete.

The total average radiation energy released by ^{138}I β^- decay is 7750 keV *318* (calculated by evaluator using the computer program RADLST).

^{138}Xe Levels

E(level)[†]	J^π[#]
0.0	0$^+$
588.825 *18*	2$^+$
1072.53 *3*	(4$^+$)
1463.99 *7*	(2$^+$)
1866.20 *8*	(1,2$^+$)
1903.17 *6*	(2$^+$,3,4$^+$)
2015.48 *8*	(3$^-$)
2114.67 *12*	(1,2$^+$)
2117.22 *15*	
2212.54 *13*	
2262.14 *7*	(1,2$^+$)
2331.91 *13*	(2$^+$,3,4$^+$)
2334.07 *12*	(1$^-$,2,3)
2398.15 *11*	(1,2$^+$)
2543.72 *9*	(1,2$^+$)
2572.45 *10*	(1,2$^+$)
2644.8[‡] *3*	(1,2$^+$)
2674.26 *10*	(1,2$^+$)
2794.37[‡] *17*	(1,2$^+$)
2835.63 *15*	(1,2$^+$)
2890.6 *3*	(1,2$^+$)
2952.59 *15*	
2964.40 *12*	(1,2$^+$)
3474.79[‡] *21*	(2$^+$)
3496.59 *12*	(1,2$^+$)
3516.51? *15*	(1,2$^+$)
3899.02 *11*	(1,2$^+$)
3961.86[‡] *11*	(1$^-$,2,3)
4167.56[‡] *14*	(1,2,3)
4182.01 *12*	(1,2$^+$)

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^{138}I β^- decay 1992Co26,1979Ho21 (continued)

^{138}Xe Levels (continued)

E(level)[†]	Jπ[#]	Comments
4318.96 *20*	(1,2$^+$)	
4490.3?[‡] *3*	(1,2,3)	
5042.0?[‡] *4*	(1,2,3)	
5141.9?[‡] *4*	(1,2,3)	
5341.66? *21*	(1,2$^+$)	
S(n)+x		S(n)(^{138}Xe)=5660.2 *28* (2017Wa10).

[†] From a least-squares fit to γ-ray energies.
[‡] Level suggested by 1992Co26 only.
[#] From Adopted Levels.

β^- radiations

Eβ(av)=2270 *13* (1982Al01).
Due to pandemonium effect and lack of proper γ-ray multipolarities for accounting for conversion electrons, the values of Iβ$^-$ and log *ft* should be considered as approximate.

E(decay)	E(level)	Iβ$^-$[†‡]	Log *ft*	Comments
(1.2×10^3[#] *12*)	S(n)+x	5.44 *20*		Iβ$^-$: %β$^-$n=5.44 *20* from Adopted Levels of ^{138}I.
(2650 *7*)	5341.66?	0.55 *6*	6.24 *5*	av Eβ=1074.9 *33*
(2850 *7*)	5141.9?	0.15 *4*	6.9 *1*	av Eβ=1167.2 *33*
(2950 *7*)	5042.0?	0.21 *4*	6.85 *9*	av Eβ=1213.5 *33*
(3502 *7*)	4490.3?	0.32 *5*	6.98 *7*	av Eβ=1470.3 *33*
(3673 *7*)	4318.96	0.45 *5*	6.92 *5*	av Eβ=1550.6 *33*
(3810 *7*)	4182.01	1.09 *10*	6.61 *4*	av Eβ=1614.8 *33*
(3824 *7*)	4167.56	1.20 *11*	6.57 *4*	av Eβ=1621.5 *33*
(4030 *7*)	3961.86	1.28 *13*	6.64 *5*	av Eβ=1718.0 *33*
(4093 *7*)	3899.02	2.12 *17*	6.45 *4*	av Eβ=1747.5 *33*
(4475 *7*)	3516.51?	0.27 *3*	7.51 *5*	av Eβ=1927.3 *33*
(4495 *7*)	3496.59	1.16 *12*	6.89 *5*	av Eβ=1936.7 *33*
(4517 *7*)	3474.79	0.50 *6*	7.26 *6*	av Eβ=1946.9 *33*
(5028 *7*)	2964.40	1.24 *11*	7.07 *4*	av Eβ=2187.2 *33*
(5039 *7*)	2952.59	0.21 *5*	7.9 *1*	av Eβ=2192.8 *33*
(5101 *7*)	2890.6	≤0.08	≥8.3	av Eβ=2222.0 *33*
(5156 *7*)	2835.63	1.55 *13*	7.02 *4*	av Eβ=2247.9 *33*
(5198 *7*)	2794.37	0.62 *7*	7.44 *5*	av Eβ=2267.3 *33*
(5318 *7*)	2674.26	0.97 *10*	7.29 *5*	av Eβ=2323.9 *33*
(5347 *7*)	2644.8	0.34 *6*	7.75 *8*	av Eβ=2337.8 *33*
(5420 *7*)	2572.45	1.28 *12*	7.20 *4*	av Eβ=2371.9 *33*
(5448 *7*)	2543.72	2.4 *4*	6.94 *8*	av Eβ=2385.4 *33*
(5594 *7*)	2398.15	2.71 *22*	6.94 *4*	av Eβ=2454.0 *33*
(5658 *7*)	2334.07	3.7 *4*	6.82 *5*	av Eβ=2484.2 *33*
(5660 *7*)	2331.91	≤0.5	≥7.7	av Eβ=2485.2 *33*
(5730 *7*)	2262.14	5.0 *4*	6.72 *4*	av Eβ=2518.0 *33*
(5779 *7*)	2212.54	0.46 *6*	7.77 *6*	av Eβ=2541.4 *33*
(5875 *7*)	2117.22	0.58 *7*	7.70 *6*	av Eβ=2586.3 *33*
(5877 *7*)	2114.67	1.05 *10*	7.44 *5*	av Eβ=2587.5 *33*
(5977 *7*)	2015.48	1.01 *10*	7.49 *5*	av Eβ=2634.2 *33*
(6089 *7*)	1903.17	1.33 *17*	7.41 *6*	av Eβ=2687.1 *33*

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^{138}I β^- decay 1992Co26,1979Ho21 (continued)

β^- radiations (continued)

E(decay)	E(level)	Iβ^-[†][‡]	Log *ft*	Comments
(6126 *7*)	1866.20	0.81 *12*	7.63 *7*	av Eβ=2704.6 *33*
(6528 *7*)	1463.99	4.7 *5*	6.99 *5*	av Eβ=2893.9 *33*
(7403 *7*)	588.825	29.1 *25*	6.44 *4*	av Eβ=3305.5 *33*
(7992 *7*)	0.0	26 *5*	8.83[1*u*] *9*	av Eβ=3568.6 *34* Iβ^-: deduced by the evaluator from 100−Σ(Iγ to g.s.)-%β^-n.

[†] From I(γ+ce) intensity balance at each level, unless otherwise noted.
[‡] Absolute intensity per 100 decays.
[#] Estimated for a range of levels.

^{138}I β^- decay 1992Co26,1979Ho21 (continued)

$\gamma(^{138}Xe)$

Iγ normalization: from %β^-n=5.44 *20* in Adopted Levels of ^{138}I and I(589γ)/n=10.2% *6* (1981Ho07).

E_γ[‡]	I_γ[‡a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[†]	Comments
212.4[@] *4*	11[@] *6*	2543.72	(1,2$^+$)	2331.91	(2$^+$,3,4$^+$)			
310.6[@] *3*	2.3[@] *7*	2644.8	(1,2$^+$)	2334.07	(1$^-$,2,3)			
318.6[@] *4*	1.4[@] *5*	2334.07	(1$^-$,2,3)	2015.48	(3$^-$)			
391.6[@] *4*	1.1[@] *5*	2964.40	(1,2$^+$)	2572.45	(1,2$^+$)			
430.83 *21*	7.8 *9*	2334.07	(1$^-$,2,3)	1903.17	(2$^+$,3,4$^+$)			E$_\gamma$: from 1992Co26. I$_\gamma$: weighted average of 8.0 *6* from 1992Co26 and 5 *2* from 1979Ho21.
439.04[@] *23*	3.3[@] *5*	1903.17	(2$^+$,3,4$^+$)	1463.99	(2$^+$)			
460.0[@] *3*	1.5[@] *5*	2794.37	(1,2$^+$)	2334.07	(1$^-$,2,3)			
467.8[@] *3*	1.6[@] *4*	2334.07	(1$^-$,2,3)	1866.20	(1,2$^+$)			
483.700 *24*	59 *3*	1072.53	(4$^+$)	588.825	2$^+$	(E2)	0.00985	α(K)=0.00833 *12*; α(L)=0.001218 *17*; α(M)=0.000249 *4* α(N)=5.10×10^{-5} *8*; α(O)=6.10×10^{-6} *9* E$_\gamma$: from 1979Bo26. Others: 483.68 *20* from 1992Co26, 483.62 *9* from 1979Ho21, 483.67 *10* from 1976We20. I$_\gamma$: weighted average of 59.7 *19* from 1992Co26 and 63 *3* from 1979Ho21.
588.825 *18*	1000 *23*	588.825	2$^+$	0.0	0$^+$	E2	0.00577	α(K)=0.00491 *7*; α(L)=0.000686 *10*; α(M)=0.0001398 *20* α(N)=2.87×10^{-5} *4*; α(O)=3.48×10^{-6} *5* E$_\gamma$: from 1979Bo26. Others: 588.86 *20* from 1992Co26, 588.83 *8* from 1979Ho21, 588.87 *8* from 1976We20. I$_\gamma$: from 1992Co26. Other: 1000 *35* from 1979Ho21.
621.1[@] *4*	1.1[@] *4*	2952.59		2331.91	(2$^+$,3,4$^+$)			
640.0[@] *3*	1.3[@] *4*	2543.72	(1,2$^+$)	1903.17	(2$^+$,3,4$^+$)			
650.88[c] *22*	4.0 *4*	2114.67	(1,2$^+$)	1463.99	(2$^+$)			E$_\gamma$: weighted average of 650.90 *22* from 1992Co26 and 650.8 *5* from 1979Ho21. I$_\gamma$: weighted average of 4.0 *4* from 1992Co26 and 4.2 *10* from 1979Ho21.
678.0[@] *3*	1.4[@] *4*	2890.6	(1,2$^+$)	2212.54				
[x]738.01 *23*	4.1 *4*							E$_\gamma$: weighted average of 737.90 *23* from 1992Co26 and 738.5 *5* from 1979Ho21. I$_\gamma$: weighted average of 4.0 *4* from 1992Co26 and 4.5 *10* from 1979Ho21.
771.0[@] *4*	1.4[@] *4*	2674.26	(1,2$^+$)	1903.17	(2$^+$,3,4$^+$)			
778.90[@] *22*	5.0[@] *5*	2794.37	(1,2$^+$)	2015.48	(3$^-$)			
830.69 *8*	28.7 *8*	1903.17	(2$^+$,3,4$^+$)	1072.53	(4$^+$)			E$_\gamma$: weighted average of 830.67 *20* from 1992Co26 and 830.69 *8* from 1979Ho21. Other: 830.8 *3* from 1976We20. I$_\gamma$: weighted average of 28.7 *8* from 1992Co26 and 28.9 *18* from 1979Ho21.

$^{138}_{54}Xe_{84}$-4

^{138}I β^- decay 1992Co26,1979Ho21 (continued)

$\gamma(^{138}Xe)$ (continued)

E_γ[‡]	I_γ[‡a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ	α[†]	Comments
837.80[c] *25*	2.9 *4*	2952.59		2114.67	(1,2$^+$)				E_γ: weighted average of 837.87 *25* from 1992Co26 and 837.5 *5* from 1979Ho21. I_γ: weighted average of 3.1 *4* from 1992Co26 and 2.3 *8* from 1979Ho21.
849.79[c] *24*	2.4 *5*	2964.40	(1,2$^+$)	2114.67	(1,2$^+$)				E_γ: weighted average of 849.76 *24* from 1992Co26 and 849.9 *5* from 1979Ho21. I_γ: weighted average of 2.3 *5* from 1992Co26 and 2.4 *5* from 1979Ho21.
870.05 *20*	42.9 *22*	2334.07	(1$^-$,2,3)	1463.99	(2$^+$)				E_γ: weighted average of 869.89 *21* from 1992Co26 and 870.2 *2* from 1979Ho21. I_γ: weighted average of 42.6 *13* from 1992Co26 and 58 *9* from 1979Ho21.
875.25 *13*	168 *4*	1463.99	(2$^+$)	588.825	2$^+$	(M1+E2)	−5.2 *+16−39*	0.00221 *4*	α(K)=0.00190 *4*; α(L)=0.000247 *5*; α(M)=5.01×10^{-5} *9* α(N)=1.033×10^{-5} *18*; α(O)=1.276×10^{-6} *23* E_γ: weighted average of 875.23 *20* from 1992Co26, 875.23 *13* from 1979Ho21 and 875.29 *15* from 1976We20. I_γ: weighted average of 168 *4* from 1992Co26 and 165 *14* from 1979Ho21. Mult.,δ: from 1992Co26, obtained assuming a positive parity for the 1464 level from systematics of N=84 nuclei; adopted in Adopted Gammas.
942.89 *8*	12.0 *6*	2015.48	(3$^-$)	1072.53	(4$^+$)				E_γ: weighted average of 942.74 *21* from 1992Co26 and 942.91 *8* from 1979Ho21. I_γ: weighted average of 12.1 *6* from 1992Co26 and 11.8 *6* from 1979Ho21.
974.5[@] *4*	1.6[@] *4*	5141.9?	(1,2,3)	4167.56	(1,2,3)				
987.4[c] *3*	2.5 *5*	2890.6	(1,2$^+$)	1903.17	(2$^+$,3,4$^+$)				E_γ: weighted average of 987.3 *3* from 1992Co26 and 987.5 *5* from 1979Ho21. I_γ: weighted average of 2.4 *5* from 1992Co26 and 2.8 *8* from 1979Ho21.
994.0[@] *3*	2.9[@] *5*	4490.3?	(1,2,3)	3496.59	(1,2$^+$)				
1061.2[@] *4*	1.9[@] *5*	2964.40	(1,2$^+$)	1903.17	(2$^+$,3,4$^+$)				
1079.8[@] *3*	2.4[@] *5*	2543.72	(1,2$^+$)	1463.99	(2$^+$)				
1108.29 *18*	7.2 *5*	2572.45	(1,2$^+$)	1463.99	(2$^+$)				E_γ: weighted average of 1108.31 *22* from 1992Co26 and 1108.28 *18* from 1979Ho21. I_γ: weighted average of 7.5 *6* from 1992Co26 and 7.0 *5* from 1979Ho21.
1210.2[@] *3*	3.0[@] *6*	2674.26	(1,2$^+$)	1463.99	(2$^+$)				
[x]1257.1[@] *3*	5.8[@] *7*								

$^{138}_{54}Xe_{84}$-5

$\gamma(^{138}Xe)$ (continued)

E_γ ‡	I_γ ‡[a]	E_i(level)	J_i^π	E_f	J_f^π	Comments
1259.1 *3*	11.1 *20*	2331.91	$(2^+,3,4^+)$	1072.53	(4^+)	E_γ: unweighted average of 1259.41 *23* from 1992Co26 and 1258.84 *14* from 1979Ho21. I_γ: unweighted average of 9.1 *7* from 1992Co26 and 13.0 *8* from 1979Ho21.
1277.45 *11*	42.6 *12*	1866.20	$(1,2^+)$	588.825	2^+	E_γ: weighted average of 1277.43 *20* from 1992Co26 and 1277.45 *11* from 1979Ho21. Other: 1277.7 *3* from 1976We20. I_γ: weighted average of 42.6 *12* from 1992Co26 and 42.4 *21* from 1979Ho21.
1314.30 *10*	16.9 *11*	1903.17	$(2^+,3,4^+)$	588.825	2^+	E_γ: weighted average of 1314.41 *21* from 1992Co26 and 1314.28 *10* from 1979Ho21. I_γ: unweighted average of 15.8 *7* from 1992Co26 and 17.9 *6* from 1979Ho21.
1326.3@ *3*	1.9@ *5*	3899.02	$(1,2^+)$	2572.45	$(1,2^+)$	
1331.2@ *5*	1.4@ *5*	2794.37	$(1,2^+)$	1463.99	(2^+)	
1355.80[c] *11*	6.3 *7*	3899.02	$(1,2^+)$	2543.72	$(1,2^+)$	E_γ: weighted average of 1355.77 *24* from 1992Co26 and 1355.81 *11* from 1979Ho21. I_γ: weighted average of 5.7 *5* from 1992Co26 and 7.1 *6* from 1979Ho21.
1371.57 *23*	5.7 *5*	2835.63	$(1,2^+)$	1463.99	(2^+)	E_γ: weighted average of 1371.60 *23* from 1992Co26 and 1371.4 *5* from 1979Ho21. I_γ: weighted average of 5.9 *5* from 1992Co26 and 4.7 *10* from 1979Ho21.
1379.3@ *5*	1.5@ *5*	3496.59	$(1,2^+)$	2117.22		
1426.76 *21*	19.6 *8*	2015.48	(3^-)	588.825	2^+	E_γ: weighted average of 1426.69 *21* from 1992Co26 and 1426.9 *3* from 1979Ho21. I_γ: weighted average of 19.6 *8* from 1992Co26 and 21 *6* from 1979Ho21.
[x]1444.92 *17*	4.6 *3*					E_γ: weighted average of 1444.95 *22* from 1992Co26 and 1444.90 *17* from 1979Ho21. I_γ: from 1979Ho21. Other: 11.4 *6* from 1992Co26.
1463.98 *21*	12.6 *16*	1463.99	(2^+)	0.0	0^+	E_γ: weighted average of 1463.95 *21* from 1992Co26 and 1464.0 *2* from 1979Ho21. Other: 1463.2 *12* from 1976We20. I_γ: weighted average of 14.2 *7* from 1992Co26 and 11.0 *12* from 1979Ho21.
1500.42 *11*	16.4 *7*	2964.40	$(1,2^+)$	1463.99	(2^+)	E_γ: weighted average of 1500.49 *21* from 1992Co26 and 1500.40 *11* from 1979Ho21. I_γ: weighted average of 16.5 *7* from 1992Co26 and 16.3 *9* from 1979Ho21.
1525.83 *13*	15.5 *8*	2114.67	$(1,2^+)$	588.825	2^+	E_γ: weighted average of 1525.85 *22* from 1992Co26 and 1525.82 *13* from 1979Ho21. I_γ: weighted average of 15.7 *8* from 1992Co26 and 15.1 *12* from 1979Ho21.
1528.38 *15*	11.8 *7*	2117.22		588.825	2^+	E_γ: weighted average of 1528.41 *20* from 1992Co26 and 1528.37 *15* from 1979Ho21. I_γ: weighted average of 11.8 *8* from 1992Co26 and 11.8 *7* from 1979Ho21.
1545.6@ *5*	1.9@ *5*	5042.0?	(1,2,3)	3496.59	$(1,2^+)$	
1567.20[c] *25*	5.3 *7*	3899.02	$(1,2^+)$	2331.91	$(2^+,3,4^+)$	E_γ: weighted average of 1567.22 *25* from 1992Co26 and 1567.1 *5* from 1979Ho21. I_γ: weighted average of 5.7 *6* from 1992Co26 and 4.1 *10* from 1979Ho21.
1594.7@ *5*	1.4@ *5*	4167.56	(1,2,3)	2572.45	$(1,2^+)$	
1609.3@ *5*	1.4@ *5*	4182.01	$(1,2^+)$	2572.45	$(1,2^+)$	
1623.69 *13*	9.6 *6*	2212.54		588.825	2^+	E_γ: weighted average of 1623.71 *23* from 1992Co26 and 1623.68 *13* from 1979Ho21.
1629.7@ *3*	2.8@ *5*	3961.86	$(1^-,2,3)$	2331.91	$(2^+,3,4^+)$	
1666.7@ *7*	1.1@ *5*	5141.9?	(1,2,3)	3474.79	(2^+)	
1673.28 *9*	21.8 *8*	2262.14	$(1,2^+)$	588.825	2^+	E_γ: weighted average of 1673.28 *22* from 1992Co26 and 1673.28 *9* from 1979Ho21. I_γ: weighted average of 21.7 *8* from 1992Co26 and 21.9 *8* from 1979Ho21.
[x]1678.56 *19*	4.8 *5*					E_γ: weighted average of 1678.4 *3* from 1992Co26 and 1678.62 *19* from 1979Ho21. I_γ: weighted average of 4.9 *5* from 1992Co26 and 4.7 *5* from 1979Ho21.
[x]1696.1 *5*	2.5 *9*					E_γ,I_γ: from 1992Co26. Other: Eγ=1697.33 *19*, Iγ=4.9 *6* from 1979Ho21.
[x]1698.1 *5*	2.9 *9*					E_γ,I_γ: from 1992Co26. Other: Eγ=1697.33 *19*, Iγ=4.9 *6* from 1979Ho21.

$^{138}_{54}Xe_{84}$-6

$\gamma(^{138}Xe)$ (continued)

E_γ ‡	I_γ ‡ a	E_i(level)	J_i^π	E_f	J_f^π	Comments
x1707.3 4	4.5 7					E_γ: weighted average of 1708.0 4 from 1992Co26 and 1707.1 2 from 1979Ho21. I_γ: weighted average of 5.3 15 from 1992Co26 and 4.3 7 from 1979Ho21.
1743.1@ 3	9.4@ 10	2331.91	(2+,3,4+)	588.825	2+	
1745.0 4	16 3	2334.07	(1−,2,3)	588.825	2+	E_γ: unweighted average of 1745.39 24 from 1992Co26 and 1744.6 2 from 1979Ho21. I_γ: unweighted average of 12.4 10 from 1992Co26 and 19.1 20 from 1979Ho21.
1809.28 14	35.1 11	2398.15	(1,2+)	588.825	2+	E_γ: weighted average of 1809.23 22 from 1992Co26 and 1809.30 14 from 1979Ho21. Other: 1809.5 5 from 1976We20. I_γ: weighted average of 34.6 11 from 1992Co26 and 36.6 18 from 1979Ho21.
1815.6@ 4	2.8@ 6	4490.3?	(1,2,3)	2674.26	(1,2+)	
1835.44 17	3.9 6	4167.56	(1,2,3)	2331.91	(2+,3,4+)	E_γ: weighted average of 1835.2 3 from 1992Co26 and 1835.52 17 from 1979Ho21. Placed by 1992Co26; unplaced in 1979Ho21. I_γ: weighted average of 3.1 5 from 1992Co26 and 4.4 4 from 1979Ho21.
1845.0@ 3	3.5@ 5	5341.66?	(1,2+)	3496.59	(1,2+)	
1866.20 17	6.5 6	1866.20	(1,2+)	0.0	0+	E_γ: weighted average of 1866.10 25 from 1992Co26 and 1866.25 17 from 1979Ho21. I_γ: weighted average of 7.1 6 from 1992Co26 and 6.0 5 from 1979Ho21.
x1889.02 19	6.9 6					E_γ: weighted average of 1888.98 25 from 1992Co26 and 1889.04 19 from 1979Ho21. I_γ: weighted average of 7.0 6 from 1992Co26 and 6.8 6 from 1979Ho21.
1919.94 18	2.5 2	4182.01	(1,2+)	2262.14	(1,2+)	E_γ,I_γ: from 1979Ho21, not observed by 1992Co26.
1946.26 13	7.2 3	3961.86	(1−,2,3)	2015.48	(3−)	E_γ: weighted average of 1946.2 3 from 1992Co26 and 1946.27 13 from 1979Ho21. Placed by 1992Co26 based on observed 1946γ-1427γ-589γ-coin; no evidence for the placement by 1979Ho21 from a level at E=2535. I_γ: weighted average of 6.9 6 from 1992Co26 and 7.3 3 from 1979Ho21.
1954.88 12	14.4 12	2543.72	(1,2+)	588.825	2+	E_γ: weighted average of 1954.80 23 from 1992Co26 and 1954.90 12 from 1979Ho21. I_γ: unweighted average of 15.6 8 from 1992Co26 and 13.2 4 from 1979Ho21.
2032.79b 15	14.4b 9	3496.59	(1,2+)	1463.99	(2+)	E_γ: weighted average of 2032.79 24 from 1992Co26 and 2032.79 15 from 1979Ho21. I_γ: weighted average of 13.7 7 from 1992Co26 and 15.6 9 from 1979Ho21.
2032.79b 15	14.4b 9	3899.02	(1,2+)	1866.20	(1,2+)	E_γ: weighted average of 2032.79 24 from 1992Co26 and 2032.79 15 from 1979Ho21. I_γ: weighted average of 13.7 7 from 1992Co26 and 15.6 9 from 1979Ho21.
2058.84 14	12.8 15	3961.86	(1−,2,3)	1903.17	(2+,3,4+)	E_γ: weighted average of 2058.8 3 from 1992Co26 and 2058.85 14 from 1979Ho21. Placed by 1992Co26 based on observed 2059γ-831γ-coin; no evidence for the placement by 1979Ho21 from a level at E=3131. I_γ: unweighted average of 11.3 8 from 1992Co26 and 14.3 7 from 1979Ho21.
2085.43 12	13.7 5	2674.26	(1,2+)	588.825	2+	E_γ: weighted average of 2085.49 24 from 1992Co26 and 2085.42 12 from 1979Ho21. I_γ: weighted average of 13.6 5 from 1992Co26 and 13.8 6 from 1979Ho21.
2114.7 3	3.2 5	2114.67	(1,2+)	0.0	0+	E_γ: weighted average of 2114.7 3 from 1992Co26 and 2114.7 5 from 1979Ho21. I_γ: weighted average of 3.6 5 from 1992Co26 and 2.7 5 from 1979Ho21.
2151.3@ 4	1.8@ 4	5042.0?	(1,2,3)	2890.6	(1,2+)	
x2157.60 24	3.1 2					E_γ: weighted average of 2157.2 3 from 1992Co26 and 2157.75 18 from 1979Ho21. I_γ: weighted average of 3.5 5 from 1992Co26 and 3.0 2 from 1979Ho21.
2262.20 11	69.3 21	2262.14	(1,2+)	0.0	0+	E_γ: weighted average of 2262.26 25 from 1992Co26 and 2262.19 11 from 1979Ho21. I_γ: weighted average of 69.7 21 from 1992Co26 and 69 2 from 1979Ho21.
2301.57 16	17.8 8	4167.56	(1,2,3)	1866.20	(1,2+)	E_γ: weighted average of 2301.6 3 from 1992Co26 and 2301.56 16 from 1979Ho21. Placed

$^{138}_{54}Xe_{84}$-7

^{138}I β^- decay 1992Co26,1979Ho21 (continued)

$\gamma(^{138}Xe)$ (continued)

E_γ ‡	I_γ ‡a	E_i(level)	J_i^π	E_f	J_f^π	Comments
						by 1992Co26 based on observed 2302γ-1277γ-589γ-coin; no evidence for the placement by 1979Ho21 from the 2890 level.
						I_γ: weighted average of 17.3 *8* from 1992Co26 and 18.3 *8* from 1979Ho21.
x2307.3 *5*	2.7 *4*					E_γ: weighted average of 2306.7 *5* from 1992Co26 and 2307.6 *4* from 1979Ho21.
						I_γ: weighted average of 3.1 *7* from 1992Co26 and 2.6 *4* from 1979Ho21.
2363.69 *16*	5.2 *3*	2952.59		588.825	2^+	E_γ: weighted average of 2363.5 *3* from 1992Co26 and 2363.74 *16* from 1979Ho21.
						I_γ: weighted average of 5.7 *5* from 1992Co26 and 5.0 *3* from 1979Ho21.
2376.0[c] *2*	3.0 *4*	2964.40	$(1,2^+)$	588.825	2^+	E_γ: weighted average of 2376.2 *4* from 1992Co26 and 2375.9 *2* from 1979Ho21.
						I_γ: weighted average of 3.6 *5* from 1992Co26 and 2.8 *3* from 1979Ho21.
2389.2@ *5*	2.6@ *5*	5341.66?	$(1,2^+)$	2952.59		
2398.16 *15*	13.3 *14*	2398.15	$(1,2^+)$	0.0	0^+	E_γ: weighted average of 2398.2 *3* from 1992Co26 and 2398.15 *15* from 1979Ho21. Other: 2398.3 *5* from 1976We20.
						I_γ: unweighted average of 14.6 *8* from 1992Co26 and 11.9 *5* from 1979Ho21.
2402.24@ *22*	8.0@ *4*	3474.79	(2^+)	1072.53	(4^+)	
2452.5@ *9*	0.8@ *4*	4318.96	$(1,2^+)$	1866.20	$(1,2^+)$	
2543.73 *14*	14.1 *4*	2543.72	$(1,2^+)$	0.0	0^+	E_γ: weighted average of 2543.7 *3* from 1992Co26 and 2543.73 *14* from 1979Ho21.
						I_γ: weighted average of 13.7 *7* from 1992Co26 and 14.2 *4* from 1979Ho21.
2572.38 *14*	21.5 *6*	2572.45	$(1,2^+)$	0.0	0^+	E_γ: weighted average of 2572.4 *3* from 1992Co26 and 2572.38 *14* from 1979Ho21.
						I_γ: weighted average of 21.8 *10* from 1992Co26 and 21.4 *6* from 1979Ho21.
2644.9@ *4*	3.8@ *5*	2644.8	$(1,2^+)$	0.0	0^+	
x2670.2 *4*	1.6 *3*					E_γ: weighted average of 2670.0 *5* from 1992Co26 and 2670.4 *4* from 1979Ho21.
						I_γ: weighted average of 2.2 *4* from 1992Co26 and 1.5 *2* from 1979Ho21.
2674.0 *3*	2.1 *3*	2674.26	$(1,2^+)$	0.0	0^+	E_γ: weighted average of 2673.8 *5* from 1992Co26 and 2674.1 *3* from 1979Ho21.
						I_γ: weighted average of 2.0 *4* from 1992Co26 and 2.1 *3* from 1979Ho21.
x2685.40 *15*	3.3 *2*					E_γ: weighted average of 2685.6 *4* from 1992Co26 and 2685.37 *15* from 1979Ho21.
						I_γ: weighted average of 3.1 *4* from 1992Co26 and 3.3 *2* from 1979Ho21.
x2700.2 *3*	1.9 *2*					E_γ: weighted average of 2700.8 *4* from 1992Co26 and 2700.1 *2* from 1979Ho21.
						I_γ: weighted average of 2.1 *4* from 1992Co26 and 1.8 *2* from 1979Ho21.
2794.3@ *4*	3.1@ *4*	2794.37	$(1,2^+)$	0.0	0^+	
x2805.9 *6*	1.7 *3*					E_γ: weighted average of 2805.2 *5* from 1992Co26 and 2806.4 *4* from 1979Ho21. Placed by 1979Ho21 from a level at E=2535. See comment for 1946γ.
						I_γ: weighted average of 1.9 *4* from 1992Co26 and 1.6 *3* from 1979Ho21.
2826.1@ *6*	1.3@ *3*	3899.02	$(1,2^+)$	1072.53	(4^+)	
2835.64 *19*	22.0 *8*	2835.63	$(1,2^+)$	0.0	0^+	E_γ: weighted average of 2835.6 *4* from 1992Co26 and 2835.65 *19* from 1979Ho21.
						I_γ: weighted average of 21.6 *11* from 1992Co26 and 22.2 *8* from 1979Ho21.
x2842.4 *5*	1.3 *3*					E_γ: weighted average of 2842.1 *5* from 1992Co26 and 2842.6 *5* from 1979Ho21.
						I_γ: weighted average of 1.7 *4* from 1992Co26 and 1.1 *3* from 1979Ho21.
2890.7@ *6*	1.2@ *3*	2890.6	$(1,2^+)$	0.0	0^+	
2927.82 *20*	2.1 *1*	3516.51?	$(1,2^+)$	588.825	2^+	E_γ: weighted average of 2928.6 *5* from 1992Co26 and 2927.77 *13* from 1979Ho21.
						I_γ: weighted average of 2.0 *4* from 1992Co26 and 2.1 *1* from 1979Ho21.
2964.4 *3*	2.8 *3*	2964.40	$(1,2^+)$	0.0	0^+	E_γ: weighted average of 2964.4 *5* from 1992Co26 and 2964.4 *3* from 1979Ho21.
						I_γ: weighted average of 2.6 *4* from 1992Co26 and 2.8 *2* from 1979Ho21.

^{138}I β^- decay 1992Co26,1979Ho21 (continued)

$\gamma(^{138}Xe)$ (continued)

E_γ[‡]	I_γ[‡a]	E_i(level)	J_i^π	E_f	J_f^π	Comments
3026.1[b@c] 6	2.2[b@] 4	4490.3?	(1,2,3)	1463.99	(2$^+$)	
3026.1[b@c] 5	2.2[b@] 5	5042.0?	(1,2,3)	2015.48	(3$^-$)	
3026.1[b@c] 5	2.2[b@] 4	5141.9?	(1,2,3)	2114.67	(1,2$^+$)	
[x]3141.5 2	3.9 2					E_γ: weighted average of 3141.8 *5* from 1992Co26 and 3141.5 *2* from 1979Ho21. I_γ: weighted average of 4.6 *5* from 1992Co26 and 3.8 *2* from 1979Ho21.
3310.28 *15*	19.4 *8*	3899.02	(1,2$^+$)	588.825	2$^+$	E_γ: weighted average of 3310.3 *5* from 1992Co26 and 3310.28 *15* from 1979Ho21. I_γ: weighted average of 19.0 *12* from 1992Co26 and 19.5 *8* from 1979Ho21.
[x]3366.9[&] *3*	1.4[&] *4*					
[x]3372.9[&] *6*	2.5[&] *4*					
[x]3452.3 *3*	2.3 *3*					E_γ: weighted average of 3452.3 *6* from 1992Co26 and 3452.3 *3* from 1979Ho21. I_γ: weighted average of 2.9 *4* from 1992Co26 and 2.2 *2* from 1979Ho21.
[x]3458.6 2	3.2 2					E_γ: weighted average of 3458.7 *6* from 1992Co26 and 3458.6 *2* from 1979Ho21. I_γ: weighted average of 3.2 *4* from 1992Co26 and 3.2 *2* from 1979Ho21.
3474.3[@] *7*	2.1[@] *4*	3474.79	(2$^+$)	0.0	0$^+$	
3496.3 2	13.1 *7*	3496.59	(1,2$^+$)	0.0	0$^+$	E_γ: weighted average of 3496.4 *6* from 1992Co26 and 3496.3 *2* from 1979Ho21. I_γ: weighted average of 13.1 *9* from 1992Co26 and 13.1 *7* from 1979Ho21.
3516.3 2	2.8 *3*	3516.51?	(1,2$^+$)	0.0	0$^+$	E_γ: weighted average of 3516.3 *7* from 1992Co26 and 3516.3 *2* from 1979Ho21. I_γ: weighted average of 2.6 *4* from 1992Co26 and 2.9 *3* from 1979Ho21.
[x]3578.4[&] *3*	3.4[&] *3*					
[x]3584.7[&] *2*	5.4[&] *3*					
3593.0 2	4.4 2	4182.01	(1,2$^+$)	588.825	2$^+$	E_γ,I_γ: from 1979Ho21, not observed by 1992Co26.
[x]3888.1[&] *2*	3.9[&] *4*					
3898.4 *6*	0.8 *2*	3899.02	(1,2$^+$)	0.0	0$^+$	E_γ,I_γ: from 1979Ho21, not observed by 1992Co26.
[x]3905.9[&] *3*	1.6[&] *2*					
[x]4014.1[&] *3*	1.6[&] *2*					
[x]4090.0[&] *2*	4.0[&] *2*					
[x]4099.7[&] *2*	2.5[&] *2*					
[x]4128.1[&] *3*	1.8[&] *2*					
4182.0 2	11.2 *7*	4182.01	(1,2$^+$)	0.0	0$^+$	E_γ,I_γ: from 1979Ho21, not observed by 1992Co26.
[x]4306.8[&] *3*	2.9[&] *2*					
4318.9 2	7.3 *5*	4318.96	(1,2$^+$)	0.0	0$^+$	E_γ,I_γ: from 1979Ho21, not observed by 1992Co26.
[x]4496.1[&] *3*	2.9[&] *2*					
[x]4515.2[&] *5*	1.5[&] *2*					
[x]4697.0[&] *3*	4.3[&] *3*					
[x]4720.0[&] *4*	0.9[&] *1*					
4752.7 *4*	1.5 *1*	5341.66?	(1,2$^+$)	588.825	2$^+$	E_γ,I_γ: from 1979Ho21, not observed by 1992Co26.
[x]4973.9[&] *3*	1.8[&] *1*					
[x]5004.8[&] *4*	2.1[&] *2*					

$^{138}_{54}Xe_{84}$-9

$\gamma(^{138}Xe)$ (continued)

E_γ ‡	I_γ ‡a	E_i(level)	J_i^π	E_f	J_f^π	Comments
x5261.1& 4	1.1& 2					
x5329.7& 6	1.4& 2					
5341.6 5	2.2 3	5341.66?	(1,2$^+$)	0.0	0$^+$	E_γ,I_γ: from 1979Ho21, not observed by 1992Co26.

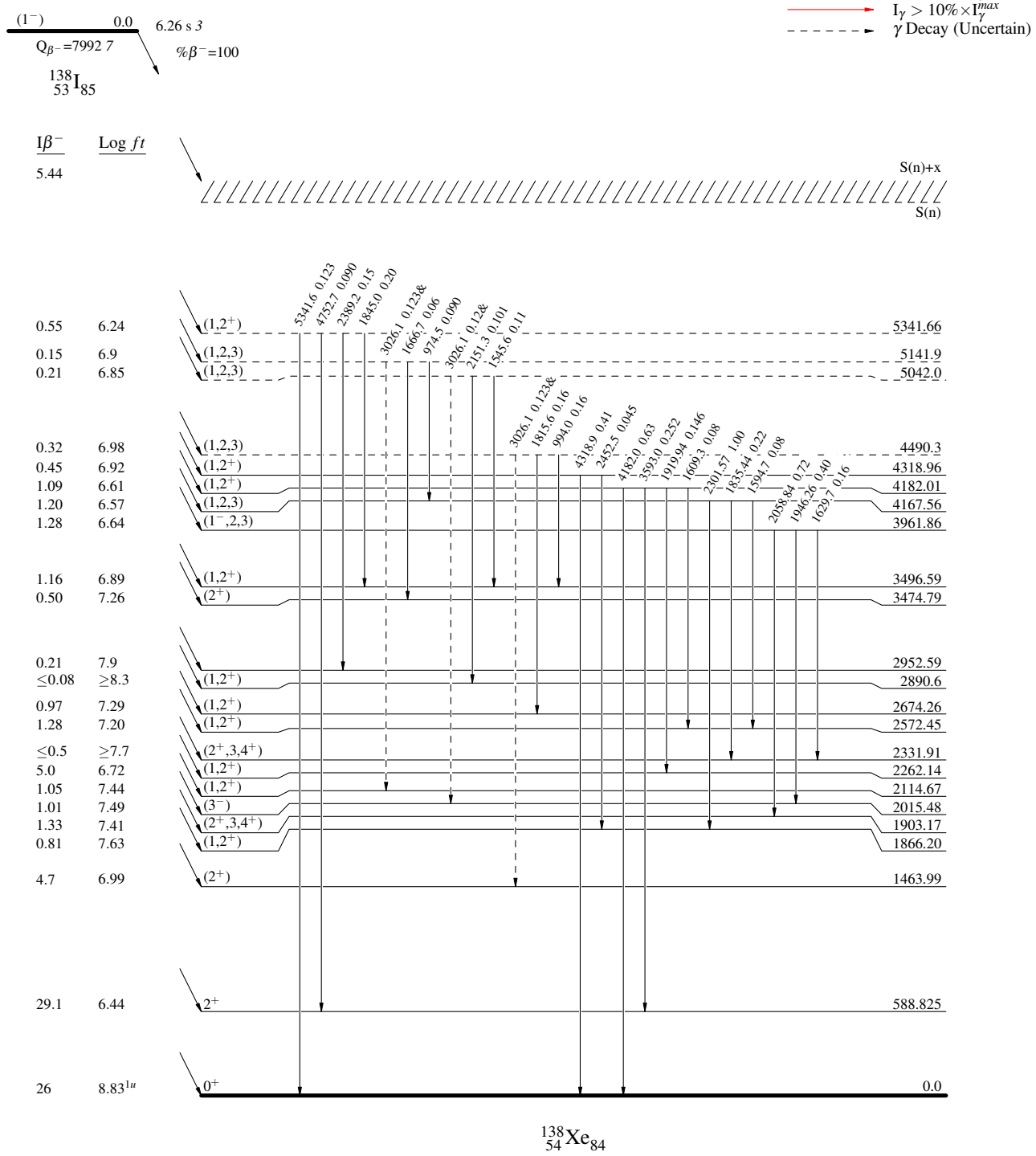
† Additional information 1.
‡ Weighted average of values from 1992Co26 and 1979Ho21 if available, unless otherwise noted. A systematical uncertainty of $\Delta E\gamma$=0.2 keV is added to values in Table 1 in 1992Co26 according to authors′ footnote.
# From Adopted Gammas.
@ From 1992Co26.
& From 1979Ho21 only.
a For absolute intensity per 100 decays, multiply by 0.056 4.
b Multiply placed with undivided intensity.
c Placement of transition in the level scheme is uncertain.
x γ ray not placed in level scheme.

^{138}I β^- decay 1992Co26,1979Ho21

Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given

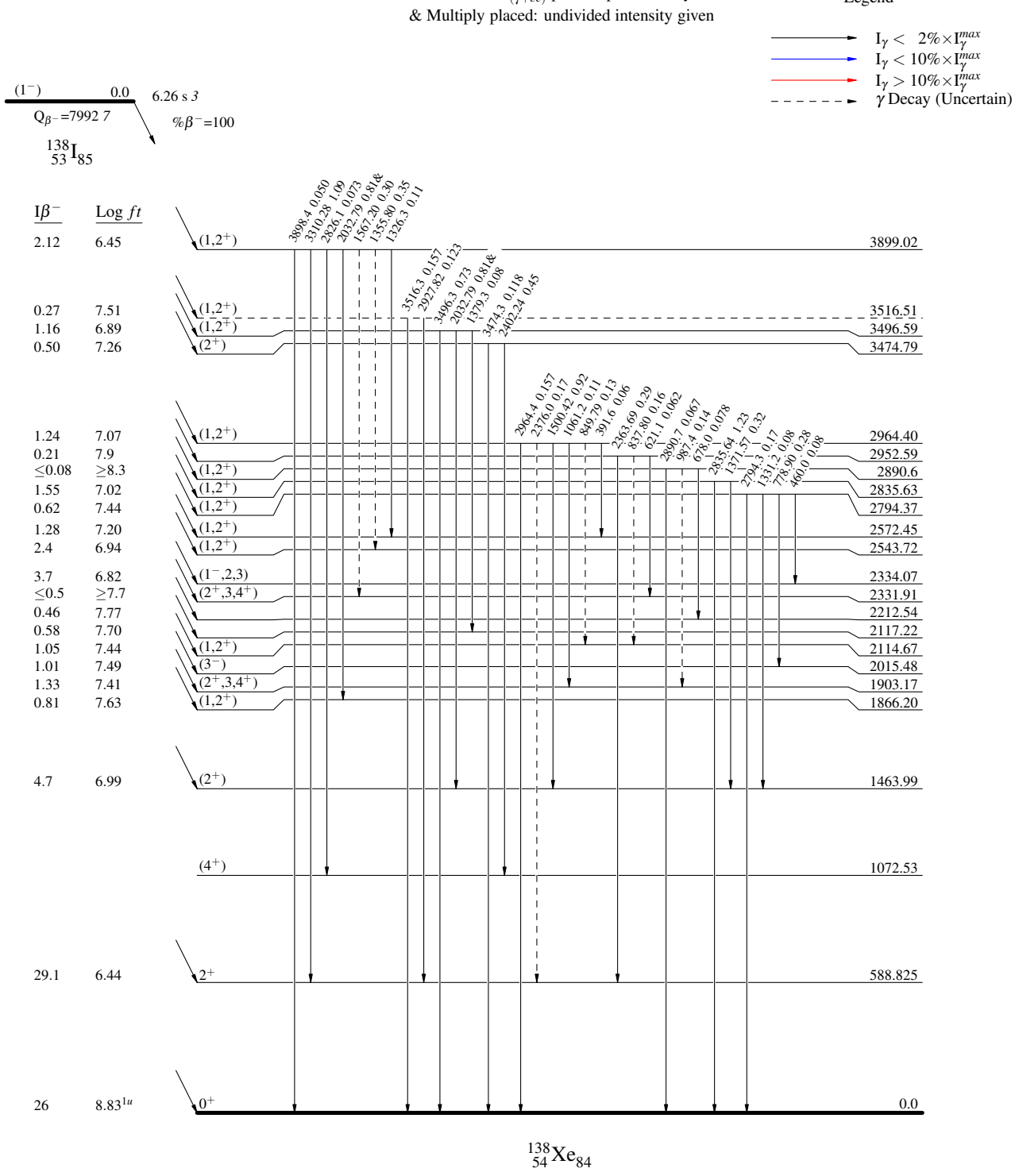
Legend
- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)



^{138}I β^- decay 1992Co26,1979Ho21

Decay Scheme (continued)

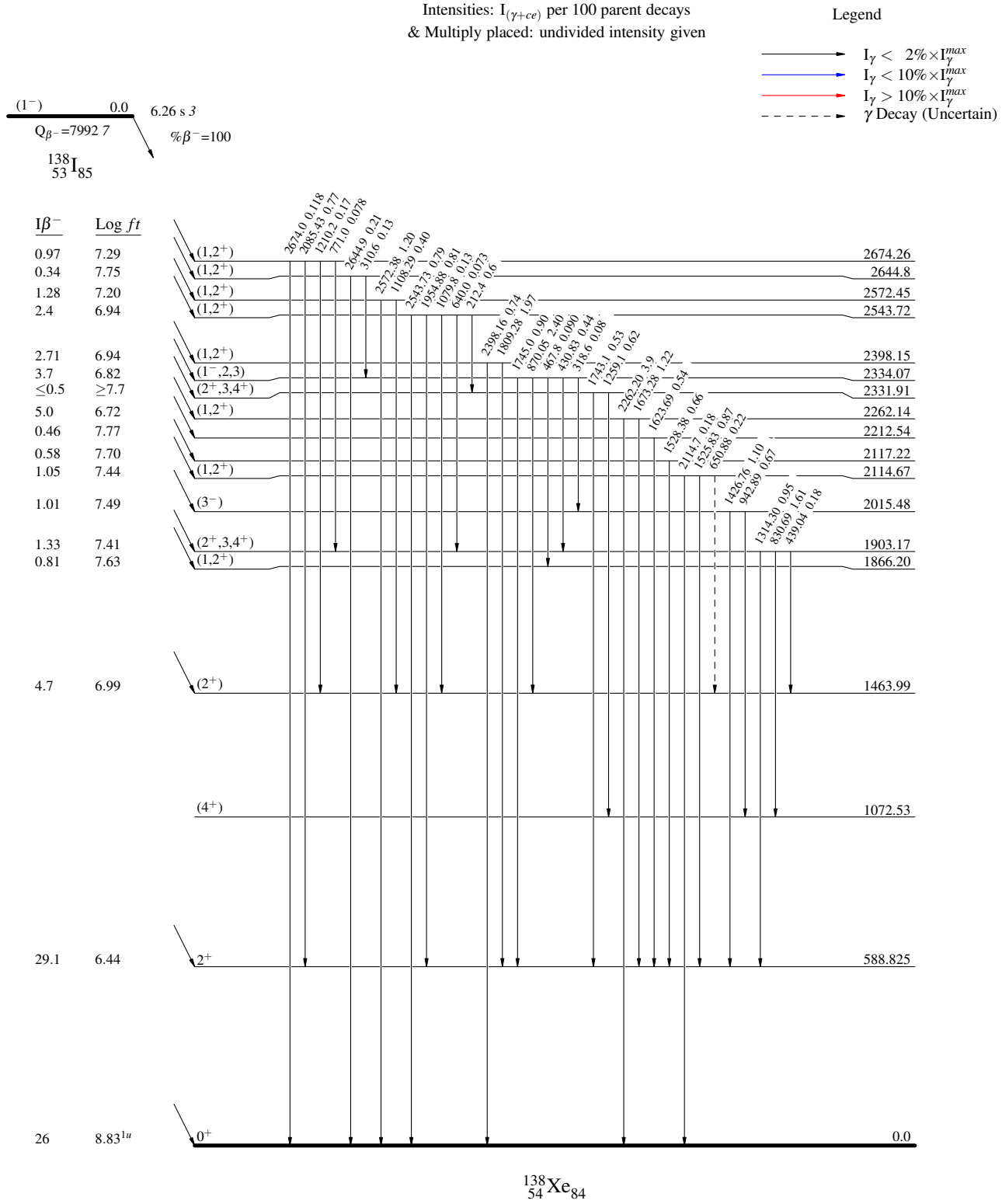
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given



^{138}I β^- decay 1992Co26,1979Ho21

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given



^{138}I β^- decay 1992Co26,1979Ho21

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given