^{164}Dy(^{11}B,5nγ) 1999Le45

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	C. M. Baglin[1], E. A. Mccutchan[2], S. Basunia[1]	NDS 153, 1 (2018)	1-Oct-2018

E=63 MeV; GASP array (40 Compton-suppressed Ge detectors and BGO multiplicity filter), planar Ge detector with 11-element multiplicity filter for $T_{1/2}$ measurements in ns range; measured Eγ, γγ coin, γγγ coin, DCO ratios (θ=34.5°, 90°), γγ(t).

^{170}Lu Levels

E(level)[†]	Jπ[‡]	$T_{1/2}$
0.0[k]	0+	
44.52[k] *10*	2+	
98.55[h] *5*	1+	2.6[#] ns *2*
114.92[h] *12*	3+	
152.08[k] *11*	4+	
176.59[l] *12*	3+	≤1 ns
206.84[h] *12*	5+	
237.68[i] *14*	4+	
262.68[g] *12*	4+	
311.86[l] *12*	5+	
315.62[p] *19*	(3+)	
316.01[j] *12*	5+	
328.89[k] *11*	6+	
375.74[h] *12*	7+	
391.43[o] *20*	(4+)	
411.62[i] *12*	6+	
428.09[g] *12*	6+	
486.28[p] *19*	(5+)	
511.84[l] *11*	7+	
524.18[j] *12*	7+	
579.96[k] *12*	8+	
597.99[o] *18*	(6+)	
621.43[h] *12*	9+	
659.15[i] *12*	8+	
670.37[g] *12*	8+	
733.93[p] *19*	(7+)	
786.40[l] *12*	9+	
809.49[j] *12*	9+	
879.23[o] *23*	(8+)	
906.94[k] *12*	10+	
940.70[h] *13*	11+	
979.97[i] *12*	10+	
989.92[g] *12*	10+	
1064.6[p] *4*	(9+)	
1139.38[l] *12*	11+	
1174.77[j] *12*	11+	
1237.44[o] *24*	(10+)	
1310.55[k] *13*	12+	
1328.66[h] *13*	13+	
1369.74[i] *13*	12+	
1386.00[g] *12*	12+	
1473.2[p] *4*	(11+)	
1568.99[l] *13*	13+	
1618.88[j] *13*	13+	
1670.0[o] *3*	(12+)	
1779.50[h] *15*	15+	
1792.18[k] *14*	14+	
1825.77[i] *15*	14+	
1855.25[g] *13*	14+	
2083.24[l] *15*	15+	
2137.68[j] *17*	15+	
2168.2[o] *11*	(14+)	
2288.61[h] *18*	17+	
2341.17[i] *18*	16+	
2353.18[k] *16*	16+	
2388.85[g] *17*	16+	
2680.04[l] *25*	17+	
2701.8[j] *3*	17+	
2853.8[h] *3*	19+	
2918.0[i] *3*	18+	
2967.5[g] *3*	18+	
2992.3[k] *4*	18+	
3298.0[j] *4*	19+	
3475.0[h] *4*	21+	
3549.3[i] *4*	20+	
3568.5[g] *4*	20+	
3907.1[j] *5*	21+	
4153.6[h] *5*	23+	
4203.3[g] *5*	22+	
4235.3[i] *5*	22+	
4859.7[g] *6*	24+	
4890.5[h] *6*	25+	
4973.7[i] *6*	24+	
5685.3[h] *8*	27+	
5772.5[i] *8*	26+	
6535.8[h] *10*	29+	
7440.1[h] *12*	31+	
0.0+x[@]	4−	
40.75+x[&] *6*	5−	
100.81+x[@] *7*	6−	
180.92+x[&] *7*	7−	
277.10+x[@] *7*	8−	

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^{164}Dy(^{11}B,5nγ) 1999Le45 (continued)

^{170}Lu Levels (continued)

E(level)[†]	J^{π}[‡]	E(level)[†]	J^{π}[‡]	E(level)[†]	J^{π}[‡]	E(level)[†]	J^{π}[‡]
397.14+x[&] *7*	9^-	439.45+y[a] *6*	8^-	2536.40+y[c] *22*	18^+	1294.8+z[r] *5*	(13^+)
527.51+x[@] *7*	10^-	441.31+y[c] *6*	10^+	2590.97+y[a] *12*	18^-	1536.3+z[q] *6*	(14^+)
692.34+x[&] *7*	11^-	454.05+y[e] *4*	8^+	2877.3+y[d] *4*	19^+	1786.2+z[r] *6*	(15^+)
855.42+x[@] *7*	12^-	553.87+y[b] *6*	9^-	2886.2+y[e] *5*	18^+	2057.1+z[q] *7*	(16^+)
1069.61+x[&] *8*	13^-	603.42+y[f] *5*	9^+	2921.44+y[b] *13*	19^-	0.0+u[t]	(5^-)
1263.78+x[@] *8*	14^-	634.09+y[d] *6*	11^+	3230.2+y[c] *4*	20^+	107.20+u[s] *10*	(6^-)
1529.13+x[&] *9*	15^-	691.86+y[a] *6*	10^-	3253.24+y[a] *14*	20^-	233.87+u[t] *14*	(7^-)
1753.75+x[@] *10*	16^-	777.13+y[e] *6*	10^+	3598.0+y[d] *5*	21^+	378.82+u[s] *20*	(8^-)
2068.64+x[&] *11*	17^-	848.10+y[c] *7*	12^+	3619.1+y[b] *5*	21^-	540.89+u[t] *23*	(9^-)
2325.33+x[@] *12*	18^-	853.26+y[b] *6*	11^-	3962.1+y[a] *6*	22^-	713.9+u[s] *3*	(10^-)
2684.05+x[&] *13*	19^-	969.44+y[f] *6*	11^+	3971.3+y[c] *6*	22^+	925.4+u[t] *4*	(11^-)
2976.63+x[@] *21*	20^-	1037.99+y[a] *6*	12^-	4355.7+y[d] *6*	23^+	1116.0+u[s] *5*	(12^-)
3370.14+x[&] *21*	21^-	1083.06+y[d] *8*	13^+	4381.9+y[b] *7*	23^-	1364.0+u[t] *5*	(13^-)
3705.3+x[@] *4*	22^-	1189.52+y[e] *7*	12^+	4730.1+y[c] *7*	24^+	1590.1+u[s] *7*	(14^-)
4122.6+x[&] *5*	23^-	1245.35+y[b] *7*	13^-	5126.8+y[d] *12*	25^+	0.0+v[m]	(4^-)
4508.3+x[@] *7*	24^-	1337.49+y[c] *8*	14^+	5524.2+y[c] *12*	26^+	101.31+v[n] *25*	(5^-)
4935.3+x[&] *11*	25^-	1420.84+y[f] *8*	13^+	5947.3+y[d] *16*	27^+	223.70+v[m] *25*	(6^-)
5383.0+x[@] *9*	26^-	1474.54+y[a] *7*	14^-	6376.1+y[c] *16*	28^+	368.7+v[n] *3*	(7^-)
5803.2+x[&] *13*	27^-	1611.38+y[d] *10*	15^+	0.0+z[r]	(5^+)	532.7+v[m] *3*	(8^-)
6323.7+x[@] *11*	28^-	1683.22+y[e] *9*	14^+	94.60+z[q] *10*	(6^+)	719.4+v[n] *4*	(9^-)
7324.7+x[@] *23*	30^-	1725.31+y[b] *8*	15^-	209.57+z[r] *14*	(7^+)	924.9+v[m] *6*	(10^-)
0.0+y[d]	7^+	1903.12+y[c] *11*	16^+	344.62+z[q] *21*	(8^+)	1150.3+v[n] *6*	(11^-)
123.79+y[c] *5*	8^+	1994.74+y[a] *8*	16^-	498.87+z[r] *24*	(9^+)	1410.6+v[m] *6*	(12^-)
226.40+y[e] *3*	6^+	2211.99+y[d] *13*	17^+	672.5+z[q] *3*	(10^+)	1661.3+v[n] *21*	(13^-)
271.14+y[d] *6*	9^+	2253.02+y[e] *22*	16^+	863.0+z[r] *3*	(11^+)		
327.95+y[f] *4*	7^+	2286.54+y[b] *9*	17^-	1072.4+z[q] *4*	(12^+)		

[†] From least-squares fit to Eγ, assuming 1 keV uncertainty in Eγ data for which the authors did not give uncertainty and omitting the 565.8γ. Of the 291 γ-rays placed in level scheme, six Eγ values differ from the least-squares adjusted value by at least four standard deviations (101.2γ, 250.77γ, 251.7γ, 368.16γ, 391.82γ, 403.6γ).

[‡] Authors′ values, based on deduced γ-ray multipolarity data, in-band branching ratios, and band characteristics (staggering, moment of inertia, crossing frequencies, Newby shift, etc.). Note, however, that for the bands based on the 0.0+u, 0.0+v and 0.0+z levels, the bandhead might lie below the lowest energy level observed (because low-energy transitions may have been missed); the J^{π} values proposed in the latter bands are based on the suggested configuration and assume that the bandhead was indeed observed.

[#] From 99γ(t).

[@] Band(A): $(\pi h_{9/2})\otimes(\nu i_{13/2})$, α=0 band. Staggered, semidecoupled structure with series of very low-energy transitions and branching typical for this configuration.

[&] Band(a): $(\pi h_{9/2})\otimes(\nu i_{13/2})$, α=1 band. Staggered, semidecoupled structure with series of very low-energy transitions and branching typical for this configuration.

[a] Band(B): $(\pi 9/2[514])\otimes(\nu i_{13/2})$, α=0 band. Transition energies resemble those of 9/2[514] bands in ^{169}Lu and ^{171}Lu; exhibits signature inversion at J=12, characteristic of 9/2[514].

[b] Band(b): $(\pi 9/2[514])\otimes(\nu i_{13/2})$, α=1 band. Transition energies resemble those of 9/2[514] bands in ^{169}Lu and ^{171}Lu; exhibits signature inversion at J=12, characteristic of 9/2[514].

[c] Band(C): $(\pi 7/2[404])\otimes(\nu i_{13/2})$, α=0 band. Transition energies closely resemble those of 7/2[404] bands in ^{169}Lu and ^{171}Lu.

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^{164}Dy(^{11}B,5nγ) 1999Le45 (continued)

^{170}Lu Levels (continued)

[d] Band(c): (π7/2[404])⊗(νi$_{13/2}$), α=1 band. Signature partner of (π 7/2[404])⊗(ν i$_{13/2}$), α=0 band; please see comments on that band.

[e] Band(D): (π5/2[402])⊗(νi$_{13/2}$), α=0 band. Transition energies resemble those of 5/2[402] bands in ^{169}Lu and ^{171}Lu.

[f] Band(d): (π5/2[402])⊗(νi$_{13/2}$), α=1 band. Transition energies resemble those of 5/2[402] bands in ^{169}Lu and ^{171}Lu.

[g] Band(E): (πh$_{9/2}$)⊗(ν1/2[521]), α=0 band (1999Le45). Doubly-decoupled band. Model calculations yield decoupling parameters close to those for (π 1/2[541]) bands in ^{169}Lu and ^{171}Lu and for (ν 1/2[521]) in ^{169}Yb and ^{171}Hf; observed Newby shift (−36.8 *8*) is close to value calculated (−34 keV; 1988Fr16) for the ^{172}Lu (π 1/2[541])-(ν 1/2[521]) configuration.

[h] Band(e): (πh$_{9/2}$)⊗(ν1/2[521]), α=1 band (1999Le45). Signature partner of (π h$_{9/2}$)⊗(ν 1/2[521]), α=0 band; see comments on that band.

[i] Band(F): ((π1/2[411])⊗(νi$_{13/2}$))4$^+$, favored, α=0 band. Semidecoupled band, twin of band based on 3$^+$ 315.6 level; assignment supported by similarity of transition energies to those for 7/2[633] band In ^{169}Yb, additivity of inertia parameters and agreement between calculated and observed In-band branching by J≈8.

[j] Band(f): ((π1/2[411])+(νi$_{13/2}$))4$^+$, favored, α=1 (1999Le45). Signature partner of ((π 1/2[411])+(ν i$_{13/2}$))4$^+$, favored, α=0 band; please see comments on that band.

[k] Band(G): K^π=0$^+$, (π7/2[404])-(ν7/2[633]), α=0 band. Doubly-decoupled band; exhibits marked dipolar staggering; Newby shift (40 *4*) matches that calculated (+36 keV; 1988Fr16) for this configuration.

[l] Band(g): K^π=0$^+$, (π7/2[404])-(ν7/2[633]), α=1 band (1999Le45). Signature partner of K^π=0$^+$, (π 7/2[404])-(ν 7/2[633]), α=0 band; please see comments on that band.

[m] Band(H): Possible (π7/2[404])⊗(ν1/2[521]), α=0 band. Semidecoupled band. Transition energy ratios suggest mixture of K=4 and 3 configurations, disfavoring (π 1/2[411])⊗(ν 5/2[512]) and (π h$_{9/2}$)⊗(ν 5/2[512]) configurations.

[n] Band(h): Possible (π7/2[404])⊗(ν1/2[521]), α=1 band. Signature partner of (π 7/2[404])⊗(ν 1/2[521]), α=0 band; please see comments on that band.

[o] Band(I): Possible unfavored ((π1/2[411])⊗(νi$_{13/2}$))3$^+$, α=0 band. Semidecoupled band, twin of band based on 4$^+$ 238 level; assignment supported by similarity of transition energies to those for 7/2[633] band In ^{169}Yb and additivity of inertia parameters.

[p] Band(i): Possible, unfavored ((π1/2[411])-(νi$_{13/2}$))3$^+$, α=1 band. signature partner of ((π 1/2[411])-(ν i$_{13/2}$))3$^+$, unfavored, α=0 band; please see comments on that band.

[q] Band(J): Possible (π9/2[514])⊗(ν1/2[521]), α=0 band. Semidecoupled band. Strong dipolar cascade suggests presence of 9/2[514] orbital and branching is similar to that in odd-proton neighbors; transition energy ratios suggest mixture of K=4 and 5 states.

[r] Band(j): Possible (π9/2[514])⊗(ν1/2[521]), α=1 band. signature partner of (π 9/2[514])⊗(ν 1/2[521]), α=0 band; please see comments on that band.

[s] Band(K): Possible (π5/2[402])⊗(ν5/2[512]), α=0 band. Dipolar staggering occurring near 173.0 transition is similar to that observed for (π 5/2[402]) bands in ^{169}Lu and ^{171}Lu; branchings favor (ν 5/2[512]) over (ν 1/2[521]).

[t] Band(k): Possible (π5/2[402])⊗(ν5/2[512]), α=1 band. Dipolar staggering occurring near 173.0 transition is similar to that observed for (π 5/2[402]) bands in ^{169}Lu and ^{171}Lu; branchings favor (ν 5/2[512]) over (ν 1/2[521]).

γ(^{170}Lu)

E_i(level)	$J^π_i$	$E_γ$	E_f	$J^π_f$	Mult.[‡]	α[e]	Comments
44.52	2$^+$	(44.52 *10*)	0.0	0$^+$			$E_γ$: from Adopted Gammas. Transition included in fig. 2 of 1999Le45, but not in table I.
98.55	1$^+$	98.55 *5*	0.0	0$^+$	(M1)	3.84	Mult.: from DCO=0.74 *5* and intensity balance, 1999Le45 assign M1+E2, inconsistent with $J^π$=1$^+$ to 0$^+$ transition.
114.92	3$^+$	(16.4)	98.55	1$^+$			$E_γ$: rounded value from Adopted Gammas. Transition included in fig. 2 of 1999Le45, but not in table I.
		70.36[f] *6*	44.52	2$^+$	M1	10.11	$E_γ$: observed by subtracting (246γ and 169γ)-γ coin spectrum from (246γ and 98.5γ)-γ coin spectrum. Mult.: from Adopted Gammas.
152.08	4$^+$	107.58 *4*	44.52	2$^+$	E2[b]	2.54	DCO=0.92 *5*.
176.59	3$^+$	132.04 *7*	44.52	2$^+$	M1+E2[d]	1.42 *24*	DCO=0.5 *1*.

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^{164}Dy(^{11}B,5nγ) 1999Le45 (continued)

γ(^{170}Lu) (continued)

E_i(level)	J^π_i	E_γ	I_γ[†]	E_f	J^π_f	Mult.[‡]	α[e]	Comments
206.84	5+	91.95 5		114.92	3+	E2[d]	4.67	DCO=0.97 5.
237.68	4+	61[f] 1		176.59	3+	[M1+E2]	14 12	
262.68	4+	56.0[#][f]		206.84	5+			E_γ: existence of γ inferred from observed distortion of Lu x-ray intensity relations.
		147.75 3		114.92	3+			
311.86	5+	73.1[#]		237.68	4+			
		134.8 2		176.59	3+	[E2]	1.097	
		159.83 5		152.08	4+	(M1+E2)		
315.62	(3+)	139.3 2		176.59	3+	(M1+E2)		
316.01	5+	77.9[#]		237.68	4+			
		164.02 4		152.08	4+	(M1+E2)		
328.89	6+	17.0[#][f]		311.86	5+			
		176.77 3		152.08	4+	(E2)[c]	0.422	DCO=1.08 5.
375.74	7+	168.88 3		206.84	5+	E2[d]	0.494	DCO=0.87 5.
391.43	(4+)	75.8 1		315.62	(3+)	[M1(+E2)]	9.2 11	
411.62	6+	95.68 7	11 11	316.01	5+	(M1+E2)		
		99.84 7		311.86	5+	(M1+E2)		
		173.95 7	100	237.68	4+	E2[b]	0.446	DCO=0.99 5.
428.09	6+	52.5[#][f]		375.74	7+			
		165.37 4		262.68	4+	E2[d]	0.531	DCO=1.01 5.
		221.29 3		206.84	5+	M1+E2[d]	0.30 10	DCO=1.3 2.
486.28	(5+)	94.8 2	2.3×10^2 12	391.43	(4+)	(M1(+E2))[c]	4.21 10	DCO=0.6 2.
		171.0 2	100	315.62	(3+)	[E2]	0.473	
511.84	7+	182.93 3	7.7×10^2 19	328.89	6+	M1+E2	0.52 15	DCO=0.35 3.
		199.9 1	100	311.86	5+	[E2]	0.278	
524.18	7+	112.48 9	72 36	411.62	6+	M1+E2	2.38 25	Mult.: from intensity balance (1999Le45).
		195.18 4		328.89	6+	(M1(+E2))	0.43 13	Mult.: DCO=0.55 3; $\Delta\pi$=(no) from level scheme.
		208.38 8	100	316.01	5+	E2[b]	0.242	DCO=1.02 5.
579.96	8+	68.08 5	22 3	511.84	7+	[M1(+E2)]	13.6 25	
		251.08 4	100	328.89	6+	(E2)[c]	0.1325	DCO=1.04 4.
597.99	(6+)	111.3 2	150 60	486.28	(5+)	(M1(+E2))[c]	2.47 24	E_γ: from fig. 2 of 1999Le45; misprinted as 11.3 in table I. DCO=0.6 2.
		186.0 2		411.62	6+	[M1(+E2)]	0.49 14	
		206.5 3	100	391.43	(4+)	[E2]	0.250	
621.43	9+	245.63 3		375.74	7+	E2[d]	0.1421	DCO=0.91 5.
659.15	8+	134.96 7	11 5	524.18	7+	[M1(+E2)]	1.33 24	
		147.0 1		511.84	7+	[M1(+E2)]	1.02 22	
		247.65 5	100	411.62	6+	[E2]	0.1384	
670.37	8+	242.5 1		428.09	6+	E2[d]	0.1480	DCO=0.83 5.
		294.71 5		375.74	7+	M1+E2[d]	0.13 5	DCO=1.4 2.
733.93	(7+)	135.89 5	120 40	597.99	(6+)	[M1(+E2)]	1.30 24	
		247.71 6	100	486.28	(5+)	[E2]	0.1383	
786.40	9+	206.47 3	[@]	579.96	8+	(M1(+E2))[c]	0.36 12	DCO=0.75 5.
		274.78 8		511.84	7+	(E2)[c]	0.1000	DCO=1.16 9.
809.49	9+	150.50 9	90 54	659.15	8+	[M1(+E2)]	0.94 21	
		229.58 4		579.96	8+	(M1(+E2))[c]	0.27 9	DCO=0.65 4.
		285.20 6	100	524.18	7+	(E2)[c]	0.0892	DCO=0.97 5.
879.23	(8+)	145.2 2		733.93	(7+)	[M1(+E2)]	1.05 22	
		220.3 3		659.15	8+	M1+E2	0.30 10	Mult.: from intensity balance; DCO ratio

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^{164}Dy(^{11}B,5nγ) 1999Le45 (continued)

γ(^{170}Lu) (continued)

E_i(level)	J_i^π	E_γ	I_γ[†]	E_f	J_f^π	Mult.[‡]	α[e]	Comments
								analysis indicates a ΔJ=0 transition (1999Le45; DCO ratio not reported).
879.23	(8+)	281 *1*		597.99	(6+)	[E2]	0.0933 *17*	
906.94	10+	120.61 *4*	[@]	786.40	9+	(M1+E2)[c]	1.9 *3*	DCO=0.45 *5*.
		326.75 *6*		579.96	8+	(E2)[c]	0.0594	DCO=0.91 *5*.
940.70	11+	319.28 *4*		621.43	9+	E2[d]	0.0636	DCO=1.02 *5*.
979.97	10+	170.8[#]	7 *4*	809.49	9+			
		309.65 *5*		670.37	8+	[E2]	0.0696	
		320.77 *6*	100	659.15	8+	[E2]	0.0627	
		359.0 *2*		621.43	9+	[E2]	0.0452	
989.92	10+	180.34 *5*		809.49	9+			
		319.61 *4*		670.37	8+	E2[d]	0.0634	DCO=1.11 *6*.
		330.82 *8*		659.15	8+	[E2]	0.0573	
		368.16 *6*		621.43	9+	[M1(+E2)]	0.07 *3*	
1064.6	(9+)	185.3 *3*		879.23	(8+)	[M1(+E2)]	0.50 *14*	
		332 *2*		733.93	(7+)	[E2]	0.0567 *13*	
1139.38	11+	232.47 *4*	[@]	906.94	10+	(M1+E2)[c]	0.26 *9*	DCO=0.45 *4*.
		353.03 *5*		786.40	9+	(E2)[c]	0.0475	DCO=0.9 *1*.
1174.77	11+	365.41 *5*		809.49	9+	[E2]	0.0430	
1237.44	(10+)	358.21 *7*		879.23	(8+)	[E2]	0.0455	
1310.55	12+	171.19 *3*	230 *40*	1139.38	11+	(M1+E2)	0.64 *17*	Mult.: DCO=0.96 *5* but level scheme requires ΔJ=1, Δπ=no.
		403.28 *9*	100	906.94	10+	(E2)[c]	0.0327	DCO=1.03 *4*.
1328.66	13+	387.98 *4*		940.70	11+	[E2]	0.0364	
1369.74	12+	379.70 *6*		989.92	10+	[E2]	0.0386	
		389.89 *8*		979.97	10+	[E2]	0.0359	
		429.5 *3*		940.70	11+			Mult.: authors assume E2 based on their in-band sum energy analysis, but level scheme requires ΔJ=1.
1386.00	12+	211.38 *6*		1174.77	11+	(M1+E2)		
		396.00 *4*		989.92	10+	(E2)[c]	0.0344	DCO=1.10 *7*.
1473.2	(11+)	408.6 *1*		1064.6	(9+)	[E2]	0.0316	
1568.99	13+	258.35 *6*	130 *24*	1310.55	12+	[M1(+E2)]	0.19 *7*	
		429.7 *1*	100	1139.38	11+	[E2]	0.0276	
1618.88	13+	444.15 *7*		1174.77	11+	[E2]	0.0252	
1670.0	(12+)	432.6 *1*		1237.44	(10+)	[E2]	0.0271	
1779.50	15+	450.84 *8*		1328.66	13+	[E2]	0.0243	
1792.18	14+	223.15 *5*	30 *4*	1568.99	13+	[M1(+E2)]	0.29 *10*	
		481.8 *1*	100	1310.55	12+	[E2]	0.0204	
1825.77	14+	455.97 *9*		1369.74	12+	[E2]	0.0235	
		497.8 *3*		1328.66	13+			
1855.25	14+	236.40 *6*		1618.88	13+	(M1+E2)		
		469.18 *8*		1386.00	12+	[E2]	0.0219	
2083.24	15+	291.02 *8*		1792.18	14+	[M1(+E2)]	0.13 *5*	
		514.2 *2*		1568.99	13+	[E2]	0.01731	
2137.68	15+	518.8 *1*		1618.88	13+	[E2]	0.01693	
2168.2	(14+)	498.2[#]		1670.0	(12+)			
2288.61	17+	509.1 *1*		1779.50	15+	[E2]	0.01775	
2341.17	16+	515.4 *1*		1825.77	14+	[E2]	0.01721	
2353.18	16+	269.91 *6*		2083.24	15+	[M1(+E2)]	0.17 *6*	
		561.3 *2*		1792.18	14+	[E2]	0.01395	
2388.85	16+	533.6 *1*		1855.25	14+	[E2]	0.01579	
2680.04	17+	596.8 *2*		2083.24	15+	[E2]	0.01204	
2701.8	17+	564.1 *2*		2137.68	15+	[E2]	0.01378	

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^{164}Dy(^{11}B,5nγ) 1999Le45 (continued)

γ(^{170}Lu) (continued)

E_i(level)	J^π_i	E_γ	I_γ†	E_f	J^π_f	Mult.‡	α[e]	Comments
2853.8	19+	565.2 *2*		2288.61	17+	[E2]	0.01372	
2918.0	18+	576.8 *2*		2341.17	16+	[E2]	0.01306	
2967.5	18+	578.7 *2*		2388.85	16+	[E2]	0.01296	
2992.3	18+	639.1 *3*		2353.18	16+	[E2]	0.01025	
3298.0	19+	596.2 *2*		2701.8	17+	[E2]	0.01207	
3475.0	21+	621.2 *2*		2853.8	19+			
3549.3	20+	631.3 *2*		2918.0	18+			
3568.5	20+	601.0 *2*		2967.5	18+	[E2]	0.01184	
3907.1	21+	609.1 *3*		3298.0	19+	[E2]	0.01147	
4153.6	23+	678.6 *3*		3475.0	21+			
4203.3	22+	634.7 *3*		3568.5	20+			
4235.3	22+	686.0 *3*		3549.3	20+			
4859.7	24+	656.4 *4*		4203.3	22+			
4890.5	25+	736.9 *4*		4153.6	23+			
4973.7	24+	738.4 *4*		4235.3	22+			
5685.3	27+	794.8 *5*		4890.5	25+			
5772.5	26+	798.8 *5*		4973.7	24+			
6535.8	29+	850.5 *5*		5685.3	27+			
7440.1	31+	904.3 *7*		6535.8	29+			
40.75+x	5−	40.56 *7*		0.0+x	4−	[M1(+E2)]		
100.81+x	6−	60.5 *5*		40.75+x	5−	[M1(+E2)]		E_γ: Masked by Kβ x ray(Lu). Existence inferred from spectra coincident with 140γ and 101γ, and from distortion of x-ray intensity relations in spectra coincident with 60.5γ.
		101.2 *1*		0.0+x	4−	[E2]	3.21	
180.92+x	7−	80.17 *4*	248 *29*	100.81+x	6−	(M1+E2)[c]	7.5 *6*	DCO=0.77 *5*.
		140.13 *3*	100	40.75+x	5−	[E2]	0.954	
277.10+x	8−	96.16 *4*	183 *16*	180.92+x	7−	(M1(+E2))[c]	4.02 *12*	DCO=0.62 *3*.
		176.30 *4*	100	100.81+x	6−	E2[b]	0.426	DCO=0.95 *5*.
397.14+x	9−	120.05 *3*	106 *7*	277.10+x	8−	(M1(+E2))[c]	1.9 *3*	DCO=0.55 *3*.
		216.22 *4*	100	180.92+x	7−	E2[b]	0.215	DCO=0.98 *5*.
527.51+x	10−	130.37 *3*	69.8 *23*	397.14+x	9−	(M1+E2)[c]	1.48 *25*	DCO=0.43 *3*.
		250.40 *3*	100	277.10+x	8−	(E2)[c]	0.1337	DCO=0.84 *5*.
692.34+x	11−	164.82 *3*	53.9 *20*	527.51+x	10−	(M1+E2)[c]	0.71 *18*	DCO=0.43 *3*.
		295.21 *3*	100	397.14+x	9−	(E2)[c]	0.0803	DCO=0.93 *5*.
855.42+x	12−	163.13 *3*	41.2 *11*	692.34+x	11−	(M1+E2)[c]	0.74 *18*	DCO=0.45 *3*.
		327.90 *3*	100	527.51+x	10−	(E2)[c]	0.0588	DCO=1.00 *3*.
1069.61+x	13−	214.31 *4*	33.5 *13*	855.42+x	12−	(M1+E2)[c]	0.32 *11*	DCO=0.41 *3*.
		377.22 *4*	100	692.34+x	11−	(E2)[c]	0.0393	DCO=1.00 *3*.
1263.78+x	14−	194.21 *3*	18.7 *6*	1069.61+x	13−	(M1+E2)[c]	0.43 *13*	DCO=0.44 *3*.
		408.25 *5*	100	855.42+x	12−	(E2)[c]	0.0316	DCO=1.07 *5*.
1529.13+x	15−	265.33 *7*	23.7 *18*	1263.78+x	14−	(M1+E2)[c]	0.17 *7*	DCO=0.38 *5*.
		459.5 *1*	100	1069.61+x	13−	(E2)[c]	0.0231	DCO=1.03 *5*.
1753.75+x	16−	224.61 *4*	9.6 *4*	1529.13+x	15−	(M1+E2)[c]	0.28 *10*	DCO=0.45 *3*.
		490.02 *9*	100	1263.78+x	14−	(E2)[c]	0.0196	DCO=1.1 *1*.
2068.64+x	17−	314.91 *6*	13.0 *7*	1753.75+x	16−	(M1+E2)[c]	0.11 *5*	DCO=0.44 *3*.
		539.5 *1*	100	1529.13+x	15−	(E2)[c]	0.01537	DCO=1.03 *5*.
2325.33+x	18−	256.72 *7*	5.6 *6*	2068.64+x	17−	(M1+E2)[c]	0.19 *7*	DCO=0.39 *5*.
		571.4 *2*	100	1753.75+x	16−	(E2)[c]	0.01336	DCO=1.13 *7*.
2684.05+x	19−	358.73 *5*	9.9 *10*	2325.33+x	18−	(M1+E2)[c]	0.08 *3*	DCO=0.55 *5*.
		615.4 *2*	100	2068.64+x	17−	(E2)[c]	0.01120	DCO=1.05 *7*.
2976.63+x	20−	291.7 *5*		2684.05+x	19−	(M1+E2)[c]	0.13 *5*	DCO=0.4 *1*.
		651.0 *3*		2325.33+x	18−	(E2)[c]	0.00983	DCO=1.3 *1*.
3370.14+x	21−	393.48 *6*		2976.63+x	20−	[M1(+E2)]	0.059 *24*	

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^{164}Dy(^{11}B,5nγ) 1999Le45 (continued)

γ(^{170}Lu) (continued)

E$_i$(level)	J$_i^\pi$	E$_\gamma$	I$_\gamma$[†]	E$_f$	J$_f^\pi$	Mult.[‡]	α[e]	Comments
3370.14+x	21$^-$	686.4 *2*		2684.05+x	19$^-$			
3705.3+x	22$^-$	728.7 *3*		2976.63+x	20$^-$			
4122.6+x	23$^-$	752.5 *4*		3370.14+x	21$^-$			
4508.3+x	24$^-$	803.0 *5*		3705.3+x	22$^-$			
4935.3+x	25$^-$	812.7[#]		4122.6+x	23$^-$			
5383.0+x	26$^-$	874.7 *6*		4508.3+x	24$^-$			
5803.2+x	27$^-$	867.9 *7*		4935.3+x	25$^-$			
6323.7+x	28$^-$	940.7 *7*		5383.0+x	26$^-$			
7324.7+x	30$^-$	1001 *2*		6323.7+x	28$^-$			
123.79+y	8$^+$	124.01 *6*		0.0+y	7$^+$	(M1+E2)	1.7 *3*	Mult.: DCO=1.04 *5*; level scheme requires ΔJ=1.
226.40+y	6$^+$	226.36 *3*		0.0+y	7$^+$	(M1+E2)		
271.14+y	9$^+$	147.35 *4*	305 *22*	123.79+y	8$^+$	(M1+E2)	1.01 *22*	Mult.: DCO=1.06 *5*; level scheme requires ΔJ=1.
		271.3 *2*	100	0.0+y	7$^+$	(E2)[c]	0.1040	DCO=0.95 *5*.
327.95+y	7$^+$	101.78 *6*		226.40+y	6$^+$	[M1(+E2)]	3.32 *19*	
		204.4 *2*		123.79+y	8$^+$	(M1+E2)		
		328.2 *2*		0.0+y	7$^+$	[M1+E2]	0.10 *4*	
439.45+y	8$^-$	168.20 *5*		271.14+y	9$^+$	(E1)		
		315.63 *4*		123.79+y	8$^+$	E1[d]	0.0182	DCO=0.86 *5* for D gate, implying ΔJ=1 transition.
		439.3 *2*		0.0+y	7$^+$	(E1)		Mult.: DCO=0.96 *8* for D gate, implying ΔJ=1 transition; Δπ=yes from level scheme.
441.31+y	10$^+$	170.28 *5*	10 *8*	271.14+y	9$^+$	(M1+E2)	0.65 *17*	Mult.: DCO=1.10 *5*; level scheme requires ΔJ=1.
		317.58 *4*	100	123.79+y	8$^+$	(E2)[c]	0.0646	DCO=0.98 *4*.
454.05+y	8$^+$	126.14 *3*		327.95+y	7$^+$	[M1(+E2)]	1.65 *25*	
		227.54 *3*		226.40+y	6$^+$	[E2]	0.182	
		330.5 *3*		123.79+y	8$^+$	[M1(+E2)]	0.09 *4*	
553.87+y	9$^-$	114.43 *4*		439.45+y	8$^-$	[M1(+E2)]	2.25 *25*	
		282.70 *4*		271.14+y	9$^+$	[E1]	0.0239	
		430.4 *1*		123.79+y	8$^+$	[E1]		
603.42+y	9$^+$	149.32 *3*	105 *18*	454.05+y	8$^+$	[M1(+E2)]	0.97 *21*	
		275.52 *4*	100	327.95+y	7$^+$	[E2]	0.0992	
		332.6 *1*		271.14+y	9$^+$	[M1(+E2)]	0.09 *4*	
634.09+y	11$^+$	192.75 *5*	17.1 *11*	441.31+y	10$^+$	(M1(+E2))[c]	0.44 *13*	DCO=0.58 *5*.
		362.92 *5*	100	271.14+y	9$^+$	(E2)[c]	0.0439	DCO=1.13 *5*.
691.86+y	10$^-$	137.99 *5*	390 *50*	553.87+y	9$^-$	(M1+E2)	1.24 *23*	Mult.: DCO=1.03 *5*; level scheme requires ΔJ=1.
		250.77 *4*		441.31+y	10$^+$	[E1]	0.0322	
		251.7 *1*	100	439.45+y	8$^-$	(E2)[c]	0.1315	DCO=0.83 *5*.
		420.88		271.14+y	9$^+$	[E1]		E$_\gamma$: uncertainty unstated by authors.
777.13+y	10$^+$	173.68 *5*	119 *30*	603.42+y	9$^+$	[M1(+E2)]	0.61 *16*	
		323.06 *6*	100	454.05+y	8$^+$	[E2]	0.0614	
848.10+y	12$^+$	214.4 *1*	6 *4*	634.09+y	11$^+$	(M1+E2)[c]	0.32 *11*	DCO=0.82 *8*.
		406.65 *9*	100	441.31+y	10$^+$	(E2)[c]	0.0320	DCO=0.88 *7*.
853.26+y	11$^-$	161.45 *3*	192 *17*	691.86+y	10$^-$	(M1+E2)	0.76 *19*	Mult.: DCO=1.01 *5*; level scheme requires ΔJ=1.
		299.6 *1*	100	553.87+y	9$^-$	(E2)[c]	0.0768	DCO=0.94 *5*.
		411.83 *7*		441.31+y	10$^+$	[E1]		
969.44+y	11$^+$	192.19 *6*	86 *43*	777.13+y	10$^+$	[M1(+E2)]	0.45 *13*	
		366.05 *4*	100	603.42+y	9$^+$	[E2]	0.0428	
1037.99+y	12$^-$	184.76 *2*	122 *11*	853.26+y	11$^-$	(M1+E2)	0.50 *15*	Mult.: DCO=0.83 *5*; level scheme requires ΔJ=1.
		346.15 *4*	100	691.86+y	10$^-$	(E2)[c]	0.0502	DCO=1.07 *5*.

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^{164}Dy(^{11}B,5nγ) 1999Le45 (continued)

γ(^{170}Lu) (continued)

E_i(level)	J_i^π	E_γ	I_γ[†]	E_f	J_f^π	Mult.[‡]	α[e]	Comments
1037.99+y	12^-	403.60 *6*		634.09+y	11^+	[E1]	0.01021	
1083.06+y	13^+	235.11 *6*	10.0 *7*	848.10+y	12^+	[M1(+E2)]	0.25 *9*	
		449.1 *1*	100	634.09+y	11^+	(E2)[c]	0.0245	DCO=0.89 *7*.
1189.52+y	12^+	220.11 *7*	9 *9*	969.44+y	11^+	[M1(+E2)]	0.30 *10*	
		412.42 *5*	100	777.13+y	10^+	[E2]	0.0308	
1245.35+y	13^-	207.41 *4*	63 *6*	1037.99+y	12^-	(M1+E2)	0.36 *12*	Mult.: DCO=0.84 *5*; level scheme requires ΔJ=1.
		391.96 *5*	100	853.26+y	11^-	(E2)	0.0354	Mult.: DCO=1.4 *1*; level scheme requires ΔJ=2.
		397.10 *9*		848.10+y	12^+	[E1]	0.01060	
1337.49+y	14^+	254.42 *8*	1.8 *18*	1083.06+y	13^+	(M1+E2)	0.20 *7*	Mult.: DCO=0.99 *7*; level scheme requires ΔJ=1.
		489.37 *9*	100	848.10+y	12^+	(E2)[c]	0.0196	DCO=0.93 *7*.
1420.84+y	13^+	231.34 *6*		1189.52+y	12^+	[M1(+E2)]	0.26 *9*	
		451.2 *1*		969.44+y	11^+	[E2]	0.0242	
1474.54+y	14^-	229.17 *3*	52 *5*	1245.35+y	13^-	(M1+E2)[c]	0.27 *9*	DCO=0.80 *5*.
		391.82 *7*		1083.06+y	13^+	[E1]	0.01093	
		436.48 *7*	100	1037.99+y	12^-	(E2)[c]	0.0264	DCO=0.88 *5*.
1611.38+y	15^+	274.0 *1*	4.0 *15*	1337.49+y	14^+	[M1(+E2)]	0.16 *6*	
		528.2 *1*	100	1083.06+y	13^+	[E2]	0.01619	
1683.22+y	14^+	262.35 *5*		1420.84+y	13^+	[M1(+E2)]	0.18 *7*	
		494.3 *2*		1189.52+y	12^+	[E2]	0.0191	
1725.31+y	15^-	250.80 *4*	49 *6*	1474.54+y	14^-	[M1(+E2)]	0.21 *8*	
		387.75 *7*		1337.49+y	14^+	[E1]	0.01120	
		479.92 *9*	100	1245.35+y	13^-	[E2]	0.0206	
1903.12+y	16^+	291.76 *4*	11.1 *17*	1611.38+y	15^+	[M1(+E2)]	0.13 *5*	
		565.8	100	1337.49+y	14^+	[E2]	0.01368	E_γ: 565.0 in Fig. 1 and 569.8 *2* in table I of 1999Le45; 565.76 *11* expected based on sum of relevant cascade transition energies.
1994.74+y	16^-	269.42 *4*	41 *5*	1725.31+y	15^-	(M1(+E2))[c]	0.17 *7*	DCO=0.69 *5*.
		520.2 *1*	100	1474.54+y	14^-	(E2)[c]	0.01682	DCO=0.8 *1*.
2211.99+y	17^+	308.89 *6*	5.3 *11*	1903.12+y	16^+	[M1(+E2)]	0.11 *5*	
		600.3 *2*	100	1611.38+y	15^+	[E2]	0.01187	
2253.02+y	16^+	569.8 *2*		1683.22+y	14^+	[E2]	0.01345	
2286.54+y	17^-	291.80 *3*	36 *9*	1994.74+y	16^-	(M1+E2)	0.13 *5*	DCO=0.96 *5*; level scheme requires ΔJ=1.
		561.4 *2*	100	1725.31+y	15^-	(E2)[c]	0.01394	DCO=1.01 *5*.
2536.40+y	18^+	324.8[#]		2211.99+y	17^+			
		633.3 *2*		1903.12+y	16^+	[E2]	0.01047	
2590.97+y	18^-	304.5 *1*	19 *4*	2286.54+y	17^-	[M1(+E2)]	0.12 *5*	
		595.9 *2*	100	1994.74+y	16^-	[E2]	0.01208	
2877.3+y	19^+	341.7[#]		2536.40+y	18^+			
		665.2 *3*		2211.99+y	17^+			
2886.2+y	18^+	633.2 *4*		2253.02+y	16^+			
2921.44+y	19^-	330.47 *6*		2590.97+y	18^-	[M1(+E2)]	0.09 *4*	
		634.9 *2*		2286.54+y	17^-	[E2]	0.01041	
3230.2+y	20^+	693.8 *3*		2536.40+y	18^+			
3253.24+y	20^-	331.80 *6*		2921.44+y	19^-	[M1(+E2)]	0.09 *4*	
		662.3 *3*		2590.97+y	18^-			
3598.0+y	21^+	720.7 *3*		2877.3+y	19^+			
3619.1+y	21^-	697.7 *4*		2921.44+y	19^-			
3962.1+y	22^-	708.9 *5*		3253.24+y	20^-			
3971.3+y	22^+	741.1 *4*		3230.2+y	20^+			
4355.7+y	23^+	757.7 *4*		3598.0+y	21^+			

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^{164}Dy(^{11}B,5nγ) 1999Le45 (continued)

γ(^{170}Lu) (continued)

E_i(level)	J^π_i	E_γ	I_γ[†]	E_f	J^π_f	Mult.[‡]	α[e]	Comments
4381.9+y	23⁻	762.8 *5*		3619.1+y	21⁻			
4730.1+y	24⁺	758.8 *4*		3971.3+y	22⁺			
5126.8+y	25⁺	771.1[#]		4355.7+y	23⁺			
5524.2+y	26⁺	794.1[#]		4730.1+y	24⁺			
5947.3+y	27⁺	820.5[#]		5126.8+y	25⁺			
6376.1+y	28⁺	851.9[#]		5524.2+y	26⁺			
94.60+z	(6⁺)	94.6 *1*		0.0+z	(5⁺)			
209.57+z	(7⁺)	115.0 *1*	>70	94.60+z	(6⁺)			
		210[f] *1*	100	0.0+z	(5⁺)			
344.62+z	(8⁺)	135.2 *2*	>100	209.57+z	(7⁺)			
		249.6 *5*	100	94.60+z	(6⁺)			
498.87+z	(9⁺)	154.2 *2*	2.7×10^2 *11*	344.62+z	(8⁺)			
		289.1 *3*	100	209.57+z	(7⁺)			
672.5+z	(10⁺)	173.5 *2*		498.87+z	(9⁺)			
		328.2 *3*		344.62+z	(8⁺)			
863.0+z	(11⁺)	190.5 *2*		672.5+z	(10⁺)			
		364.1 *3*		498.87+z	(9⁺)			
1072.4+z	(12⁺)	209.3 *3*		863.0+z	(11⁺)			
		400.0 *5*		672.5+z	(10⁺)			
1294.8+z	(13⁺)	222.4 *2*		1072.4+z	(12⁺)			
		432[f] *1*		863.0+z	(11⁺)			
1536.3+z	(14⁺)	241.5 *3*		1294.8+z	(13⁺)			
1786.2+z	(15⁺)	249.9 *3*		1536.3+z	(14⁺)			
2057.1+z	(16⁺)	270.9 *3*		1786.2+z	(15⁺)			
107.20+u	(6⁻)	107.2 *1*	[&]	0.0+u	(5⁻)			
233.87+u	(7⁻)	126.7 *1*	90 *30*	107.20+u	(6⁻)			
		234 *1*	100	0.0+u	(5⁻)			
378.82+u	(8⁻)	145.0 *2*	83 *21*	233.87+u	(7⁻)			
		271.4 *3*	100	107.20+u	(6⁻)			
540.89+u	(9⁻)	162.0 *2*	>21	378.82+u	(8⁻)			
		307.1 *3*	100	233.87+u	(7⁻)			
713.9+u	(10⁻)	173.0 *2*		540.89+u	(9⁻)			
		335.2 *3*		378.82+u	(8⁻)			
925.4+u	(11⁻)	211.5 *3*		713.9+u	(10⁻)			
		384.5		540.89+u	(9⁻)			E_γ: 384.5 *4* expected from sum of relevant cascade Eγ values. Eγ=363.2 *3* in table I and Eγ=363.2 in fig. 1 of 1999Le45.
1116.0+u	(12⁻)	402.1 *4*		713.9+u	(10⁻)			
1364.0+u	(13⁻)	438.6 *4*		925.4+u	(11⁻)			
1590.1+u	(14⁻)	474.1 *5*		1116.0+u	(12⁻)			
101.31+v	(5⁻)	101.6 *3*	[a]	0.0+v	(4⁻)	[M1+E2]	3.34 *19*	
223.70+v	(6⁻)	122.4 *1*	56 *13*	101.31+v	(5⁻)	[M1+E2]	1.8 *3*	
		223.2 *4*	100	0.0+v	(4⁻)	[E2]	0.193	
368.7+v	(7⁻)	145.0 *1*		223.70+v	(6⁻)	[M1+E2]	1.06 *22*	
		267.4 *1*		101.31+v	(5⁻)	[E2]	0.1088	
532.7+v	(8⁻)	164.5 *4*		368.7+v	(7⁻)	[M1+E2]	0.72 *18*	
		309.0 *1*		223.70+v	(6⁻)	[E2]	0.0700	
719.4+v	(9⁻)	350.7 *2*		368.7+v	(7⁻)	[E2]	0.0484	
924.9+v	(10⁻)	392.1 *5*		532.7+v	(8⁻)	(E2)[c]	0.0353	DCO=1.0 *1*.
1150.3+v	(11⁻)	430.9 *5*		719.4+v	(9⁻)	[E2]	0.0273	
1410.6+v	(12⁻)	485.7 *1*		924.9+v	(10⁻)	[E2]	0.0200	
1661.3+v	(13⁻)	511 *2*		1150.3+v	(11⁻)	[E2]	0.0176 *3*	

Continued on next page (footnotes at end of table)

^{164}Dy(^{11}B,5nγ) 1999Le45 (continued)

γ(^{170}Lu) (continued)

† Relative branching from levels deduced by evaluator from authors′ reported B(M1)(ΔJ=1)/B(E2)(ΔJ=2 γ) for in-band cascade and crossover γ-rays (table ii), assuming δ=0 for the ΔJ=1 transition. The evaluator assumes that the authors did not allow for internal conversion when calculating their B(M1)/B(E2) values.

‡ Authors′ report many values deduced from 'in-band analysis' (matching of pairs of ΔJ=1 transitions to their corresponding ΔJ=2 transitions and coincidence conditions); the evaluator shows these in square brackets here, since they are inferred from the level scheme, and omits them from Adopted Gammas. Those determined by other means are indicated via comments. The evaluator omits the multipolarities given in 1999Le45 for transitions in the bands based on the 0.0+u and 0.0+z levels; J^{π} in these bands are reported to be based entirely on theoretical assumptions.

From level scheme (figures 1 and 2 of 1999Le45); not listed in table I of 1999Le45.

@ 1999Le45 report B(M1)(ΔJ=1 γ)/B(E2)(ΔJ=2 γ)=0.5 *1* for in-band cascade and crossover γ-rays from a level in the 7/2[404]⊗$i_{13/2}$ band but, due to a typographical error in the relevant J value, the identity of the level is unclear. Presumably, it is the J=9, 10 or 11 band member; the respective values of Iγ(ΔJ=1)/Iγ(ΔJ=2) would be 2.8 *6*, 0.24 *5* or 1.15 *23*.

& 1999Le45 report B(M1)(ΔJ=1 γ)/B(E2)(ΔJ=2 γ)=0.6 *3* for in-band cascade and crossover γ-rays from the J=(6) member of the 5/2[402]⊗5/2[512] band but only one γ deexcites this level in fig. 1 of 1999Le45.

a 1999Le45 report B(M1)(ΔJ=1 γ)/B(E2)(ΔJ=2 γ)=0.4 *1* for in-band cascade and crossover γ-rays from the J=(5) member of the 7/2[404]⊗1/2[521] band but only one γ deexcites this level in fig. 2 of 1999Le45.

b Q from DCO ratio for prompt γ. Coincidence resolving time not stated by authors, but they did search for isomers in the ns range; B(M2)(W.u.) would exceed RUL, unless parent level had $T_{1/2}$ of the order of a μs or greater, so evaluator assigns E2 multipolarity.

c From measured DCO ratio and Δπ=no based on intraband character of transition.

d From measured DCO ratio and intensity balance.

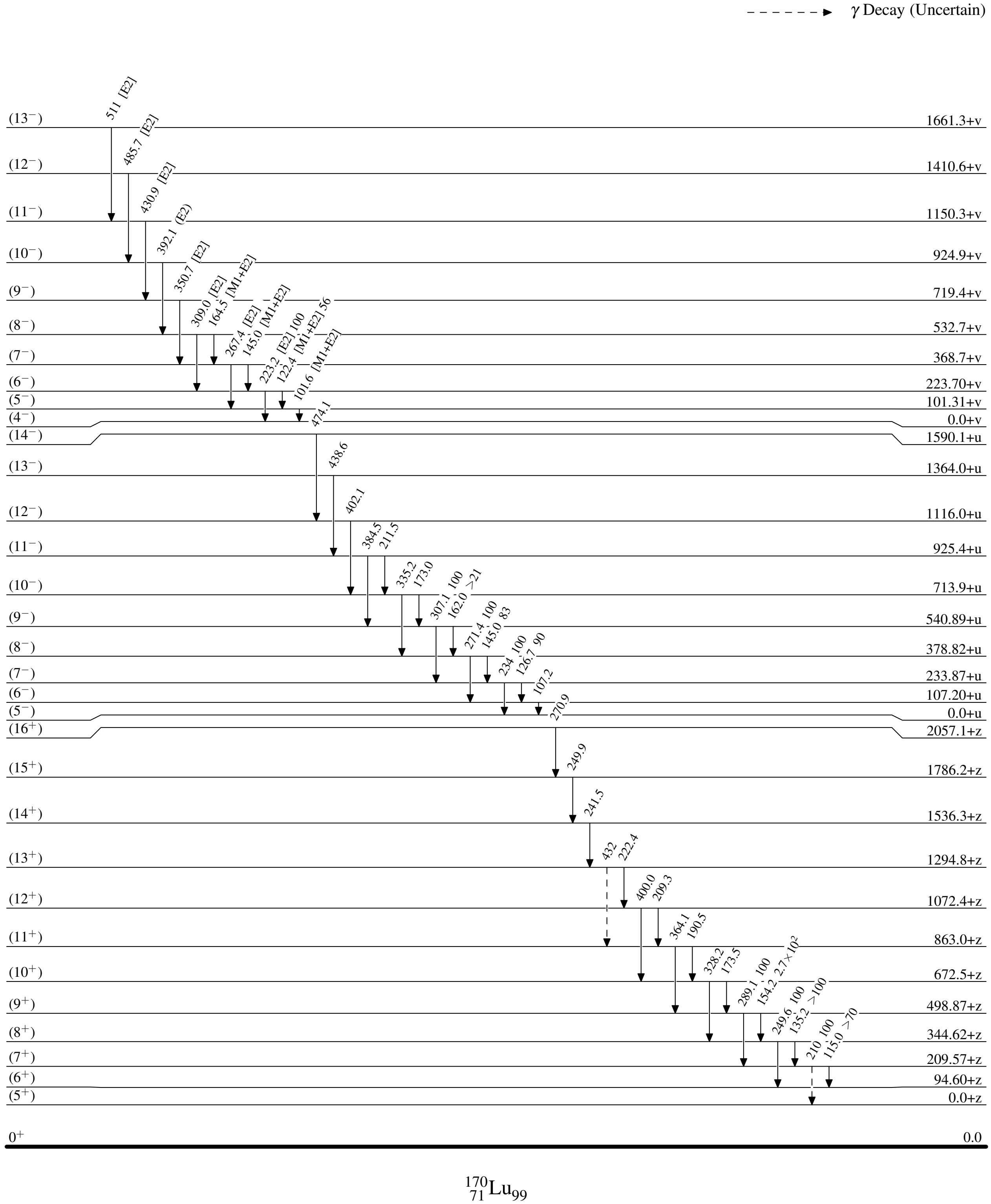
e Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

f Placement of transition in the level scheme is uncertain.

^{164}Dy(^{11}B,5nγ) 1999Le45

Level Scheme

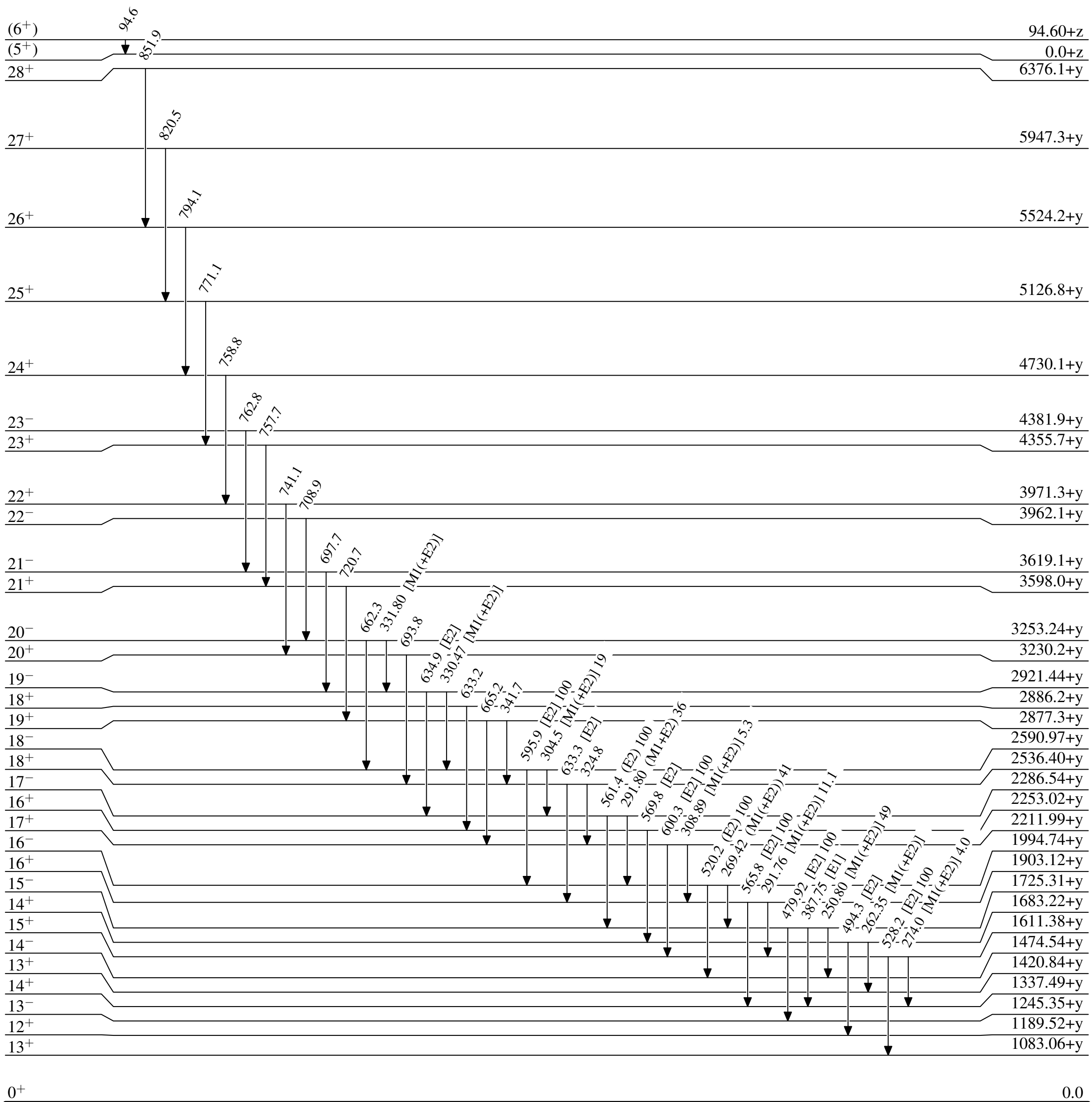
Intensities: Relative photon branching from each level



$^{164}Dy(^{11}B,5n\gamma)$ 1999Le45

Level Scheme (continued)

Intensities: Relative photon branching from each level

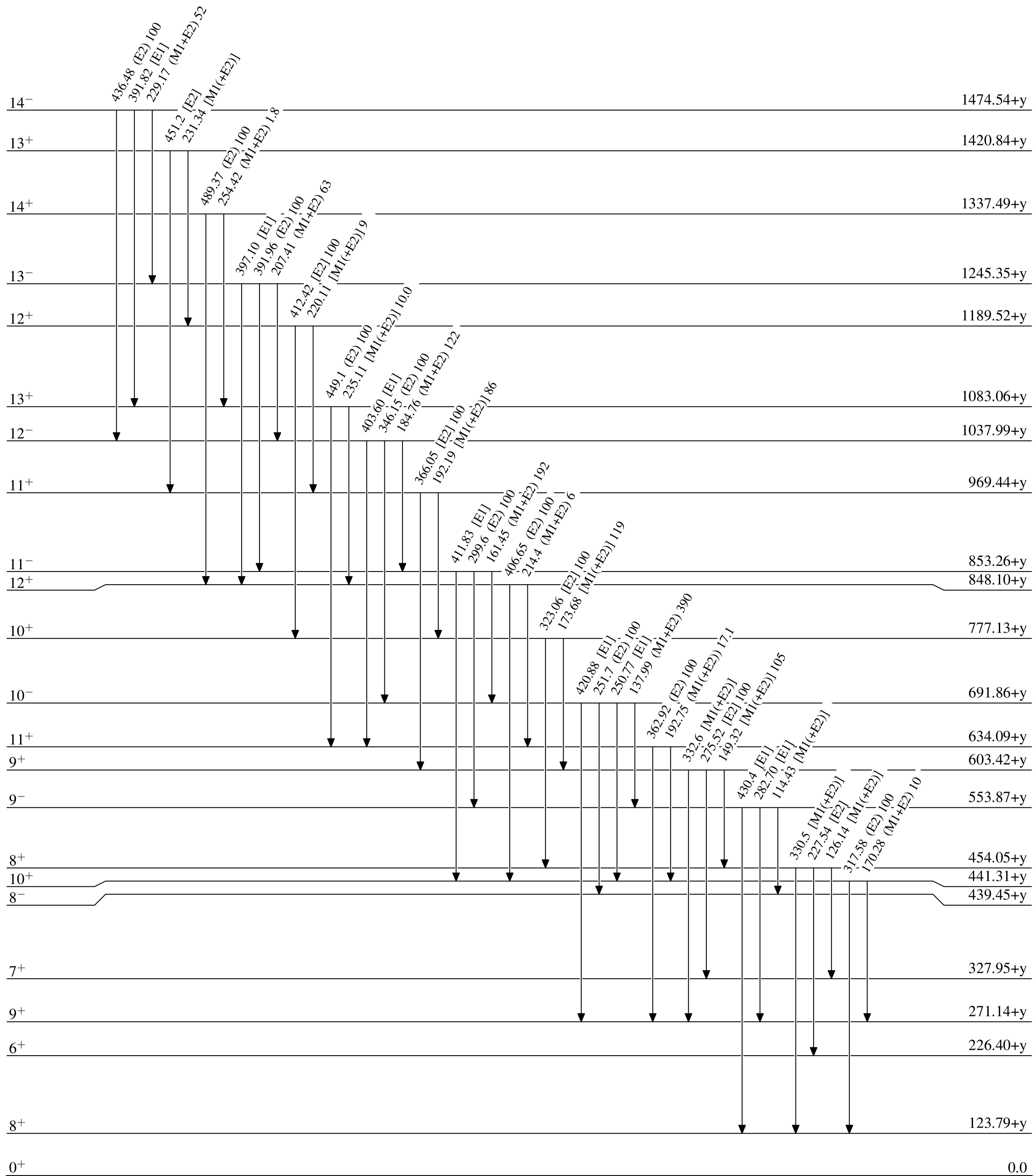


$^{170}_{71}Lu_{99}$

^{164}Dy(^{11}B,5nγ) 1999Le45

Level Scheme (continued)

Intensities: Relative photon branching from each level

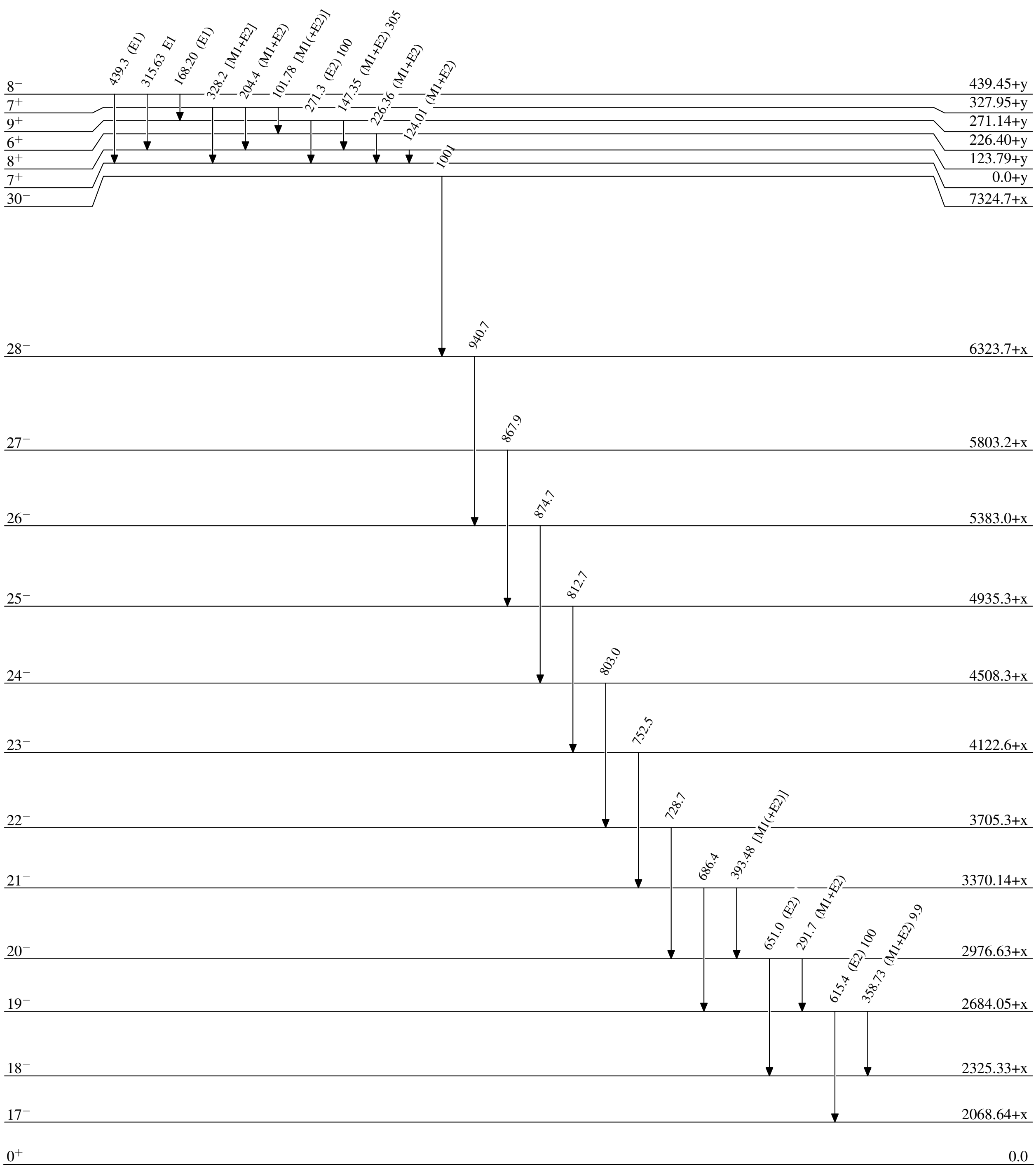


$^{170}_{71}Lu_{99}$

^{164}Dy(^{11}B,5nγ) 1999Le45

Level Scheme (continued)

Intensities: Relative photon branching from each level

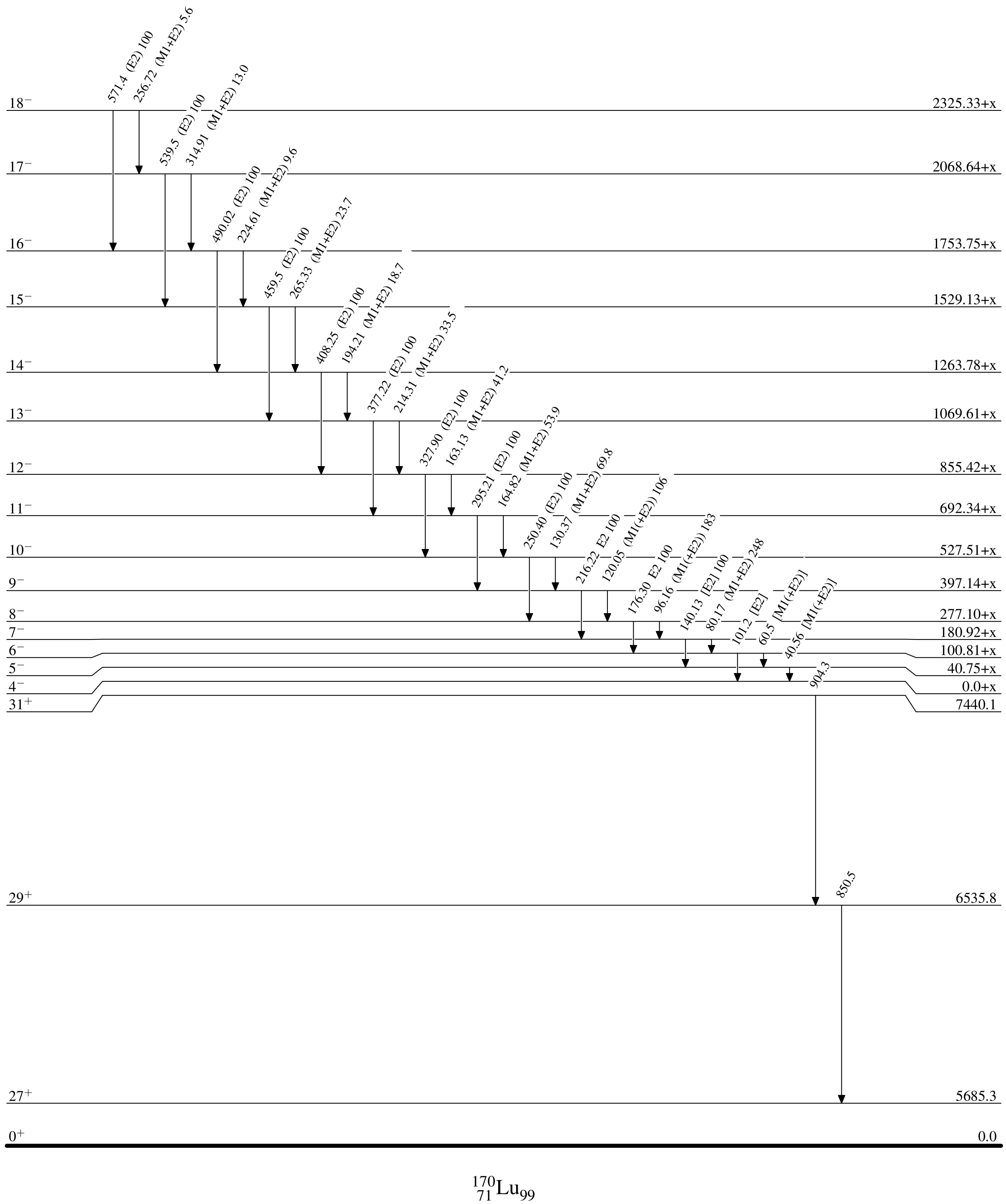


$^{170}_{71}Lu_{99}$

^{164}Dy(^{11}B,5nγ) 1999Le45

Level Scheme (continued)

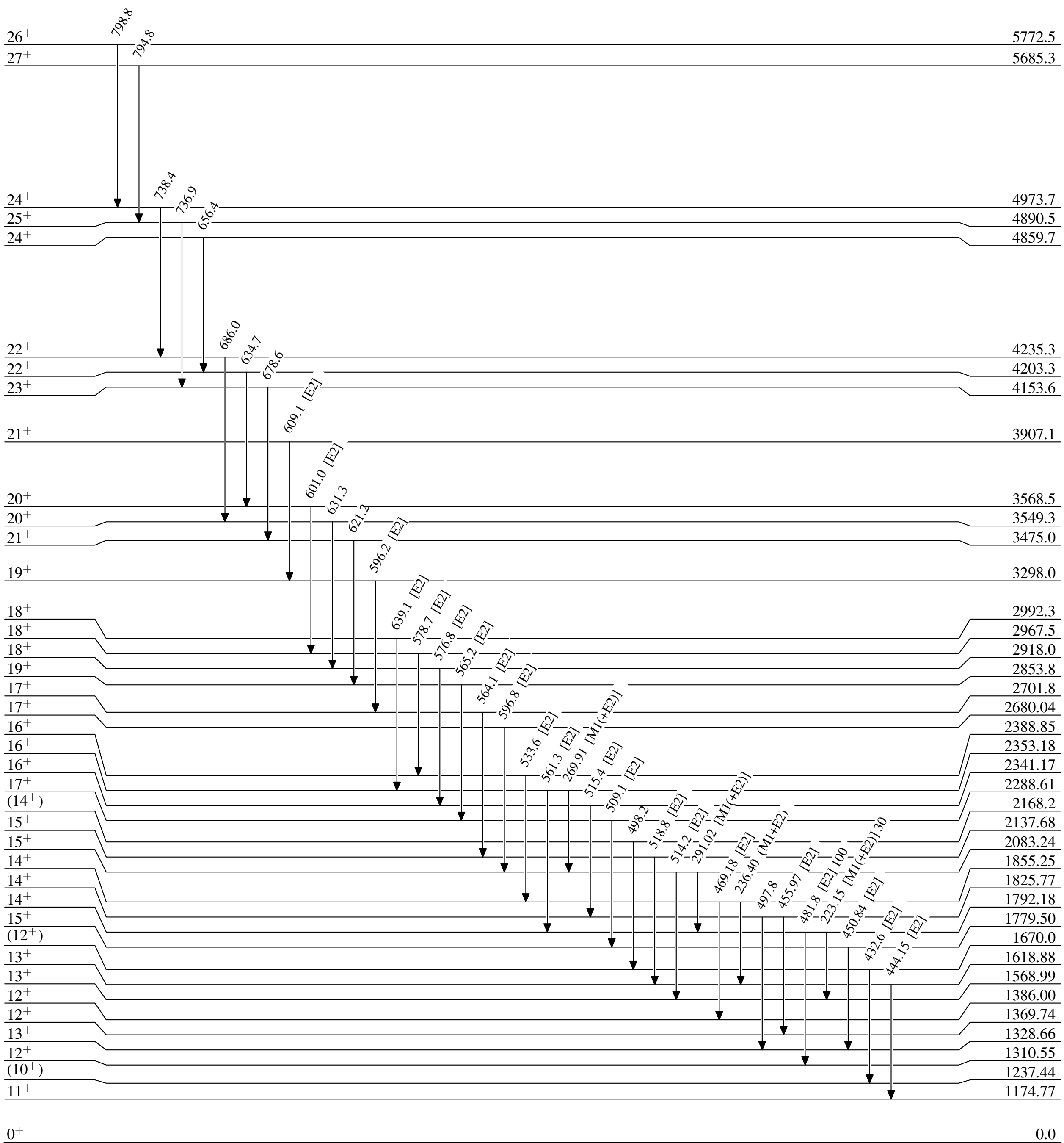
Intensities: Relative photon branching from each level



^{164}Dy(^{11}B,5nγ) 1999Le45

Level Scheme (continued)

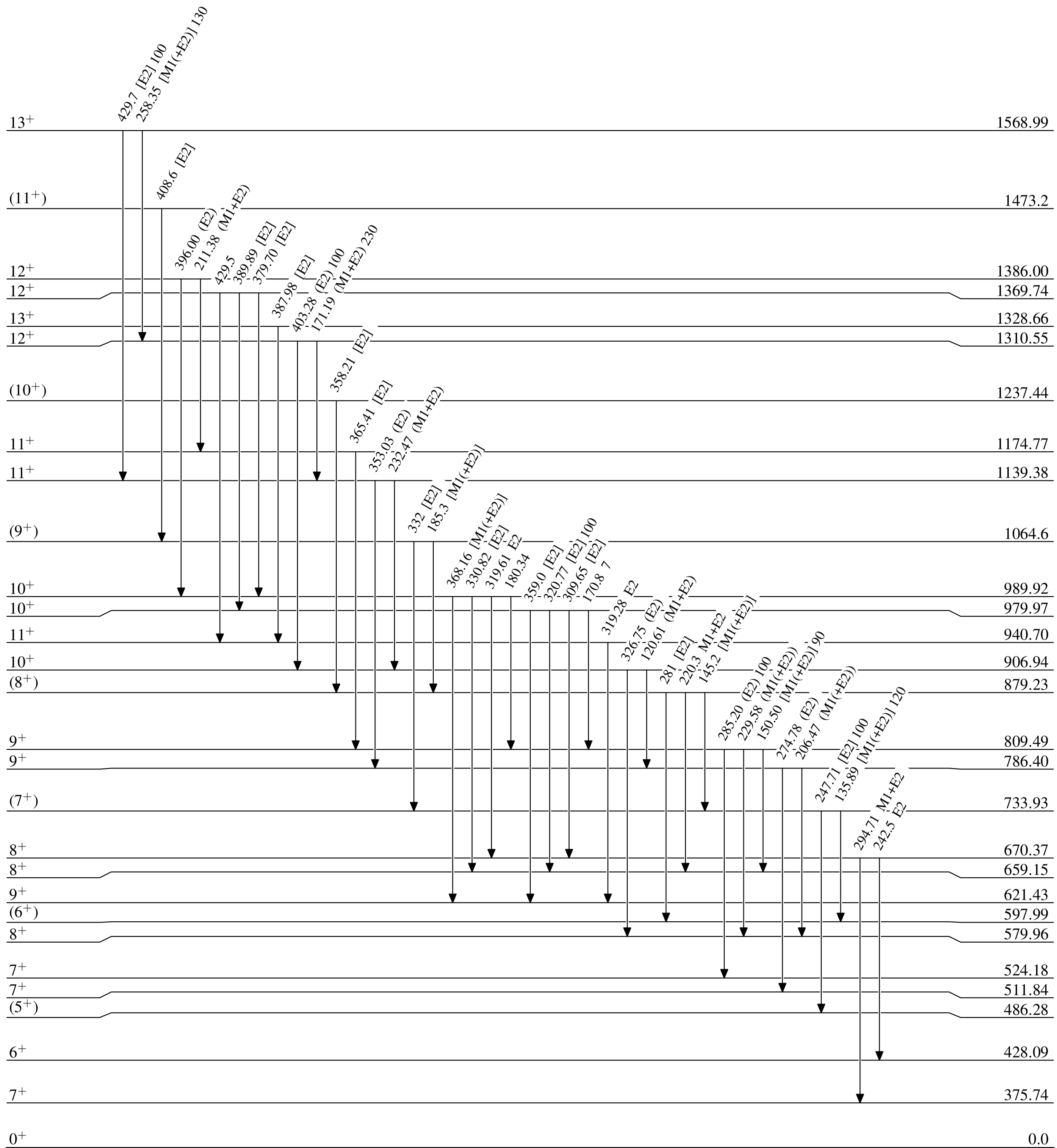
Intensities: Relative photon branching from each level



^{164}Dy(^{11}B,5nγ) 1999Le45

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{170}_{71}Lu_{99}$

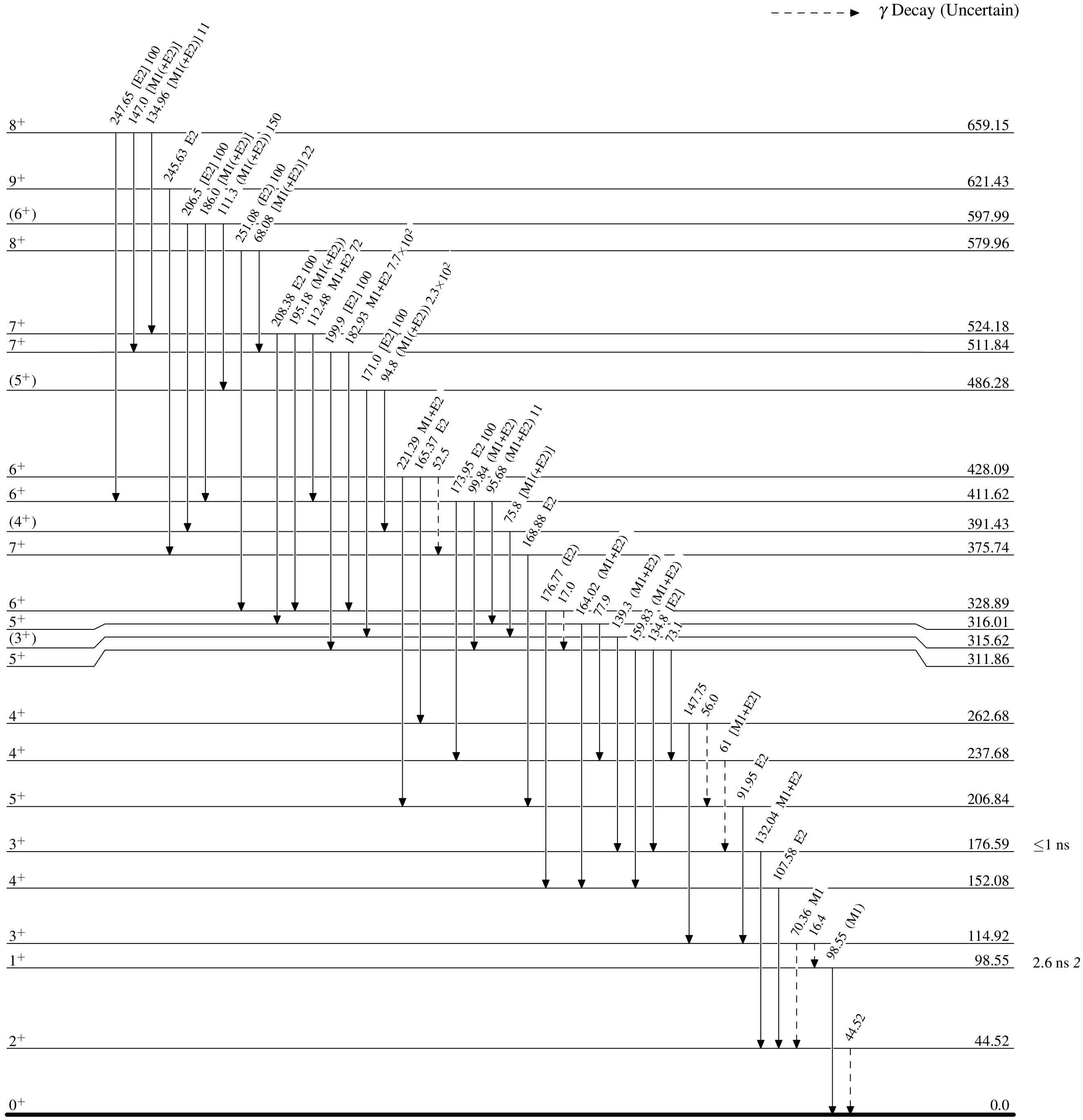
^{164}Dy(^{11}B,5nγ) 1999Le45

Legend

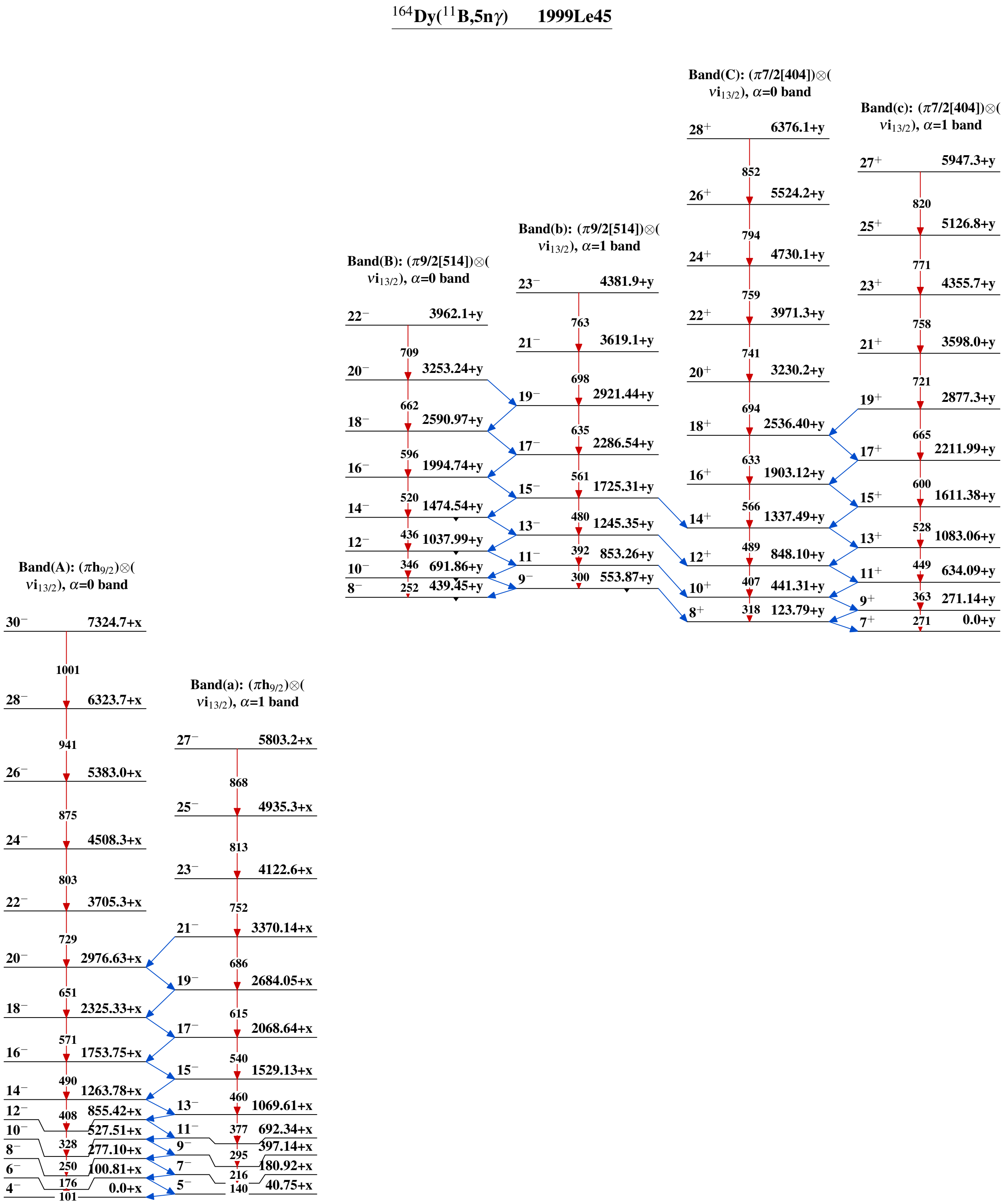
Level Scheme (continued)

Intentities: Relative photon branching from each level

γ Decay (Uncertain)

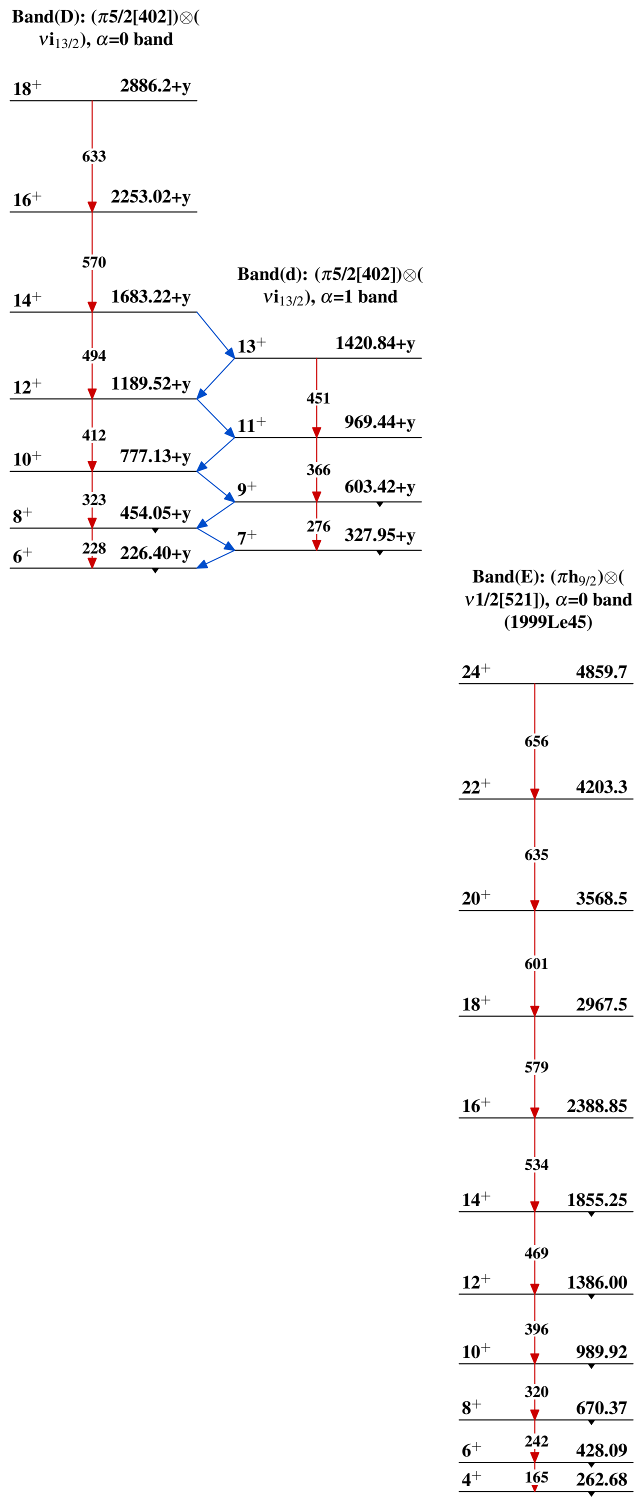


$^{170}_{71}Lu_{99}$


^{164}Dy(^{11}B,5nγ) 1999Le45
Band(A): (πh9/2)⊗(νi13/2), α=0 band
Band(a): (πh9/2)⊗(νi13/2), α=1 band
Band(B): (π9/2[514])⊗(νi13/2), α=0 band
Band(b): (π9/2[514])⊗(νi13/2), α=1 band
Band(C): (π7/2[404])⊗(νi13/2), α=0 band
Band(c): (π7/2[404])⊗(νi13/2), α=1 band
30− 7324.7+x
28− 6323.7+x
26− 5383.0+x
24− 4508.3+x
22− 3705.3+x
20− 2976.63+x
18− 2325.33+x
16− 1753.75+x
14− 1263.78+x
12− 855.42+x
10− 527.51+x
8− 277.10+x
6− 100.81+x
4− 0.0+x
27− 5803.2+x
25− 4935.3+x
23− 4122.6+x
21− 3370.14+x
19− 2684.05+x
17− 2068.64+x
15− 1529.13+x
13− 1069.61+x
11− 692.34+x
9− 397.14+x
7− 180.92+x
5− 40.75+x
22− 3962.1+y
20− 3253.24+y
18− 2590.97+y
16− 1994.74+y
14− 1474.54+y
12− 1037.99+y
10− 691.86+y
8− 439.45+y
23− 4381.9+y
21− 3619.1+y
19− 2921.44+y
17− 2286.54+y
15− 1725.31+y
13− 1245.35+y
11− 853.26+y
9− 553.87+y
28+ 6376.1+y
26+ 5524.2+y
24+ 4730.1+y
22+ 3971.3+y
20+ 3230.2+y
18+ 2536.40+y
16+ 1903.12+y
14+ 1337.49+y
12+ 848.10+y
10+ 441.31+y
8+ 123.79+y
27+ 5947.3+y
25+ 5126.8+y
23+ 4355.7+y
21+ 3598.0+y
19+ 2877.3+y
17+ 2211.99+y
15+ 1611.38+y
13+ 1083.06+y
11+ 634.09+y
9+ 271.14+y
7+ 0.0+y
1001
941
875
803
729
651
571
490
408
328
250
176
101
868
813
752
686
615
540
460
377
295
216
140
709
662
596
520
436
346
252
763
698
635
561
480
392
300
852
794
759
741
694
633
566
489
407
318
820
771
758
721
665
600
528
449
363
271

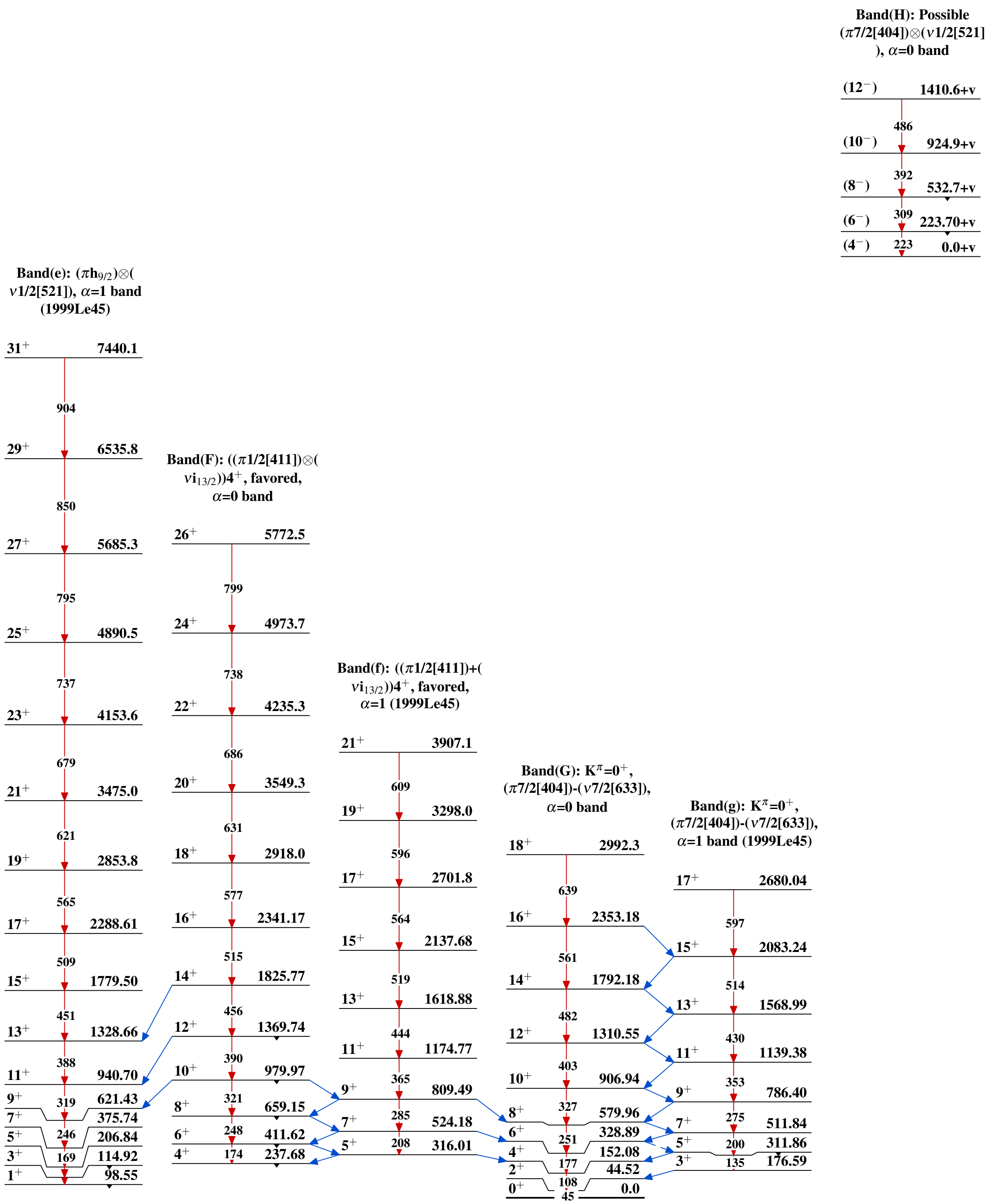
$^{170}_{71}Lu_{99}$

$^{164}Dy(^{11}B,5n\gamma)$ 1999Le45 (continued)



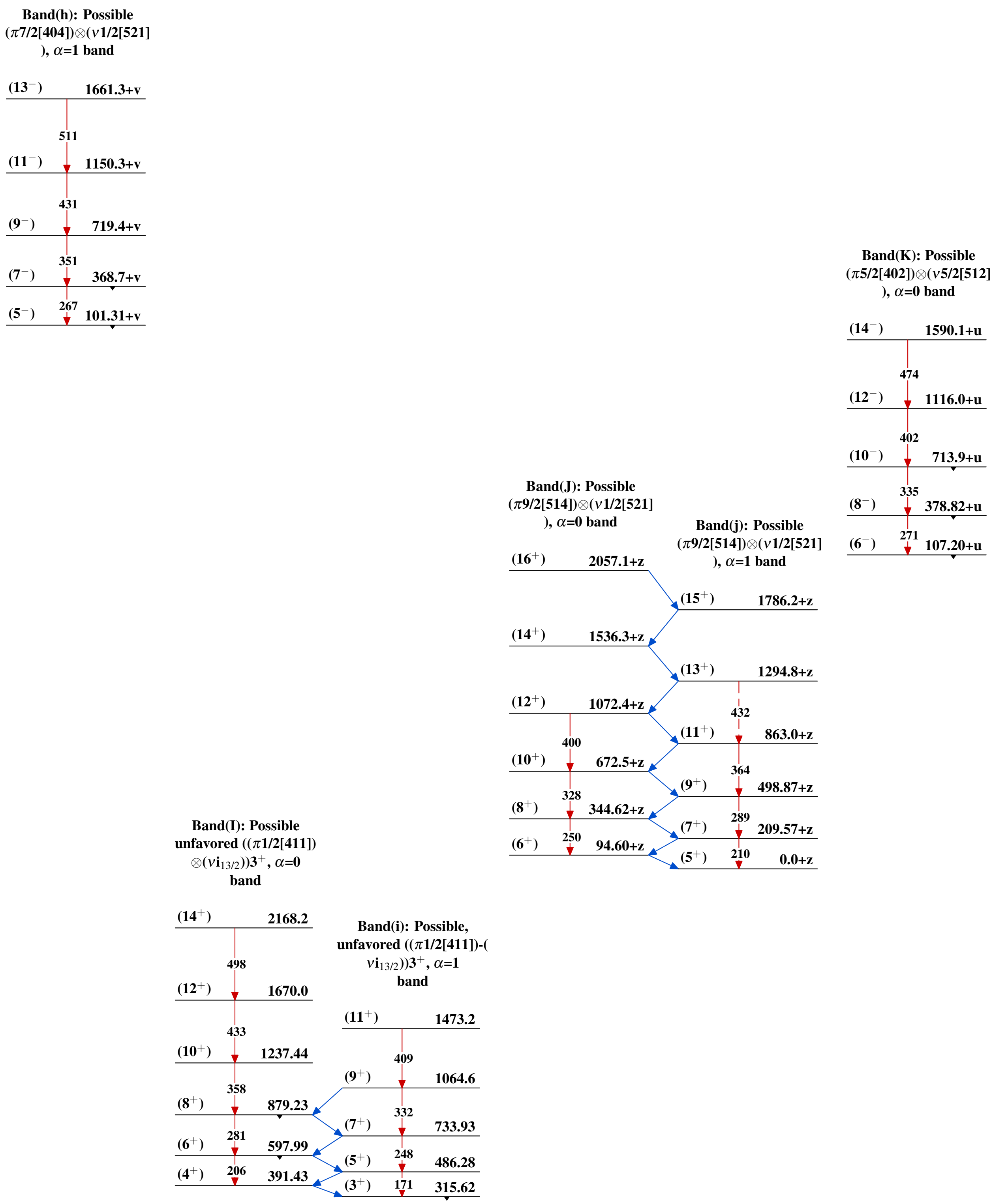
$^{170}_{71}Lu_{99}$

^{164}Dy(^{11}B,5nγ) 1999Le45 (continued)



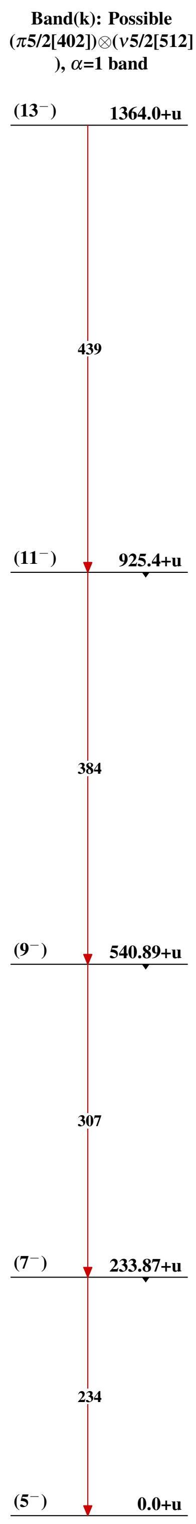
$^{170}_{71}Lu_{99}$

^{164}Dy(^{11}B,5nγ) 1999Le45 (continued)



$^{170}_{71}Lu_{99}$

^{164}Dy(^{11}B,5nγ) 1999Le45 (continued)



$^{170}_{71}Lu_{99}$