Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	C. D. Nesaraja	NDS 195,718 (2024)	12-Oct-2023

Q(β^-)=123.6 *4*; S(n)=6360 *50*; S(p)=4835.4 *26*; Q(α)=5521.0 *14* 2021Wa16
S(2n)=11786 *5*, S(2p)=11890 *100* (syst) (2021Wa16).

^{249}Bk Levels

Cross Reference (XREF) Flags

- A ^{249}Cm β^- decay
- B ^{253}Es α decay (20.47 d)
- C ^{248}Cm(α,t),(^{3}He,d)
- D Coulomb excitation

E(level)[g]	J$^\pi$	T$_{1/2}$[h]	XREF	Comments
0.0[†]	7/2$^+$	327.2 d *3*	ABCD	%α=0.00137 *10*; %β^-=99.9986 *1*; %SF=47×10^{-9} *2* μ=2.0 *4* %α: From α/β^-=1.37×10^{-5} *10* 1969Mi08. Based on the argument of 2013Ah03 who preferred %α=0.00137 *10* over 0.00145 *8*, both of which are from two separate methods in 1969Mi08. The former value does not depend on detector solid angle and the initial analysis of the number of ^{249}Bk atoms. Others: α/β^-=2.2×10^{-5} *3* (1957Ea01). %SF: from T$_{1/2}$(SF)=1.87×10^9 y *9* (1969Mi08). Other: ≥1.4×10^9 y (1957Ea01). μ: From electron paramagnetic resonance method (1972Bo67,2019StZV). J$^\pi$: J from electron paramagnetic resonance (1967Wo01); π=+ from configuration=(7/2[633]) and favored α decay from ^{253}Es (J^π=7/2$^+$). T$_{1/2}$: Weighted average of 327.2 d *3* from growth of daughter activity ^{249}Cf and the γ-ray intensities from subsequent decay of ^{249}Cf (2014Ch47), 329 d *2* from chemical purification followed by β^- decay measurement (1999Po33 supersedes 1985Po26: $\Delta t_{1/2}$=4 days quoted as 2σ) and 325 d *7* from beta decay measurement (1974Gl10). Others: 314 d *4* (1957Ea01: $\Delta t_{1/2}$=8 days quoted as about 2σ), ≈365 d (1954Di11), 290 d *20* (1954Ma98), 314 d *8* (1957Ea01). Configuration=7/2[633].
8.773[‡] *14*	3/2$^-$	0.3 ms	ABC	J$^\pi$: log *ft*=5.902 from 1/2$^+$ ^{249}Cm suggests spin 1/2, 3/2; T$_{1/2}$ is consistent with M2 transition to g.s., ΔL≥3 ruled out (B(E3)(W.u.)≈519 (RUL=100), B(M3)(W.u.)=7390 (RUL=10)).
39.616[‡] *13*	5/2$^-$		AB	J$^\pi$: M1+E2 γ to 3/2- 8.773-keV level; band member.
41.805[†] *7*	9/2$^+$	9 ps *2*	BCD	J$^\pi$: M1 41.80γ to 7/2$^+$ level; band member.
82.597[‡] *12*	7/2$^-$		ABC	J$^\pi$: M1+E2 42.98γ to 5/2- 39.616-keV level; band member.
93.759[†] *8*	11/2$^+$	5 ps *1*	B D	J$^\pi$: M1+E2 γ to 9/2$^+$ 41.805-keV level; band member.
137.712[‡] *13*	9/2$^-$		BC	XREF: C(130). J$^\pi$: M1+E2 55.11γ to 7/2$^-$ level 82.597-keV level; band.
155.854[†] *10*	13/2$^+$		BCD	J$^\pi$: M1+E2 62.08γ to 11/2$^+$ 93.759-keV level, band member.
204.574[‡] *14*	(11/2$^-$)		BC	XREF: C(199). J$^\pi$: From cross section ratio measurements in (α,t)(^{3}He,d) reaction (1975Er01); band member.
229.242[†] *11*	(15/2$^+$)		B D	J$^\pi$: (M1,E2) 73.43γ to 13/2$^+$ 155.854-keV level; band member.
283.133[‡] *14*	(13/2$^-$)		B	J$^\pi$: E2 145.42γ to (9/2$^-$) 137.712-keV level, band member.
311.857[†] *23*	(17/2$^+$)		B	J$^\pi$: 82.61γ to (15/2$^+$) 229.242-keV level, 156.08γ to 13/2$^+$ 155.854-keV level band member.
373.180[‡] *24*	(15/2$^-$)		B	J$^\pi$: 168.57γ to (11/2$^-$) 204.574-keV level; 90.05γ to (13/2$^-$) 283.133-keV level;

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Adopted Levels, Gammas (continued)

^{249}Bk Levels (continued)

E(level)[g]	Jπ	XREF	Comments
			band member.
377.555[f] *24*	(1/2+)	ABC	Jπ: Fed by β-decay from 1/2+ favors 1/2 or 3/2. 368.77γ to 3/2- 8.773-keV level; cross section ratio in (α,t)(^{3}He,d) reaction (1975Er01).
389.170[#] *17*	(5/2+)	AB	Jπ: M1 389.17γ to 7/2+ g.s.; calculated energies considering effects of of the Coriolis interaction and particle pairing among levels in the band (1964Ho10).
410.68[f] *8*	(3/2+)	ABC	Jπ: 158.3γ from (1/2−) 569.21-keV level; band member.
421.368[f] *24*	(5/2+)	AB	Jπ: 421.39γ to 7/2+ g.s.; band member.
428.955[#] *14*	(7/2+)	B	Jπ: M1 387.15γ to 9/2+ 41.805 eV level, M1+E2 428.95γ to 7/2+ g.s.; band member.
473.66[‡] *22*	(17/2−)	B	Jπ: 100.5γ to (15/2−), 190.5γ to (13/2−); band member.
475.002[#] *14*	(9/2+)	BC	XREF: C(483). Jπ: (M1) 475.00 γ's to 7/2+ g.s., (M1) 433.20γ to 9/2+ 41.805-keV level, 11/2+ level, (M1) 381.23γ to 11/2+ 93.759-keV level.
498.67[f] *7*	(7/2+)	B	Jπ: 498.6γ to 7/2+g.s., 456.84γ to 9/2+ 41.805-keV level, 416.3γ to 7/2- 82.597-keV level; band member.
519.190[f] *20*	(9/2+)	B	Jπ: 477.40γ to 9/2+ 41.80-keV level, 436.8γ to 7/2- 82.597-keV level, 425.43γ to 11/2+ 93.759-keV level; band member.
542.095[#] *20*	(11/2+)	B	Jπ: (M1) 500.30γ to 9/2+ 41.805−keV level, (M1+E2) 448.34γ to 11/2+ 93.759-keV level; band member.
553 *6*	(1/2)	C	Jπ: From low cross section ratio in the (α,t),(^{3}He,d) measurements (1975Er01) which is consistent with low *l*-value assignments and possible member of a K=1/2 band.
558.17[@] *3*	(3/2−)	ABC	Jπ: Fed by β-decay from 1/2− ^{253}Es favors 1/2 and 3/2; low cross section ratio in the (α,t),(^{3}He,d) measurements (1975Er01) which is consistent with low *l*-value assignments and possible member of a K=1/2 band.
569.21[@] *5*	(1/2−)	ABC	Jπ: Fed by β decay from 1/2− ^{253}Es favors 1/2− or 3/2−, (M1+E2) 560.42γ to (3/2−) 8.773-keV level; band member.
597.836[#] *16*	(13/2+)	BC	Jπ: (M1) 441.83γ to 13/2+ 155.854-keV level; band member.
606.69[@] *3*	(7/2−)	B	Jπ: 402.088γ to (11/2−) 204.574-keV level, 185.3γ to (5/2+) 421.368-keV level; band member.
624.30 *17*	(5/2+)	B	Jπ: From decay pattern and likely a member of the 3/2+[651] band (2005Ah03); 624.3γ to 7/2+ g.s, 235.1γ to (5/2+) 389.170-keV level.
624.93[@] *4*	(5/2−)	B	Jπ: 616.1γ to 3/2- 8.773-keV level, 542.30γ to 7/2- 82.597-keV level.
625 *1*	(9/2−)	C	Jπ: From cross section ratio in the (α,t),(^{3}He,d) measurements (1975Er01).
643.10[&] *9*	(1/2−)	ABc	Jπ: log *ft*=5.96 for β-decay from 1/2− ^{253}Es favors 1/2− and 3/2−; decay pattern (2005Ah03).
654.1 *10*		Bc	
661.51[&] *7*	(3/2−)	AB	Jπ: log *ft*=6.53 for β-decay from 1/2+ ^{249}Cm favors 1/2 and 3/2; decay pattern (2005Ah03).
671.089[f] *23*	(13/2+)	B	Jπ: 441.83γ to (15/2+) 229.242-keV level, 152.2γ to (9/2+) 519.190-keV level; band member.
672.81[b] *9*	(5/2−)	B	Jπ: 664.0γ to 3/2- 8.773-keV level, 672.8γ to 7/2+ g.s; assigned configuration 5/2−[523] (2005Ah03) as it is similar the decay of the state at 447.8 keV in ^{247}Bk (2015Ne04). Configuration=5/2−[523].
682 *6*	(11/2−)	C	Jπ: From cross section ratio in the (α,t),(^{3}He,d) measurements (1975Er01).
701.85[#] *15*	(15/2+)	B	Jπ: 608.2g to 11/2+ 93.759-keV level, 472.6γ to (15/2+) 229.242-keV level; band member.
703.42 *10*	(7/2+)	BC	Jπ: From decay pattern and likely a member of the 3/2+[651] band (2005Ah03); 661.2γ to 9/2+ 41.805-keV level, 314.2γ to (5/2+) 389.170-keV level.
704.84[@] *4*	(11/2−)	Bc	Jπ: 98.2γ to (7/2−) 606.69-keV level, 421.7γ to (13/2−) 283.133-keV level; band member.
709.11[&] *11*	(5/2−)	Bc	Jπ: 669.5γ to 5/2− 39.616-keV level, 571.0γ to 9/2− 137.7-keV level; band member.
711.15[b] *12*	(7/2−)	Bc	Jπ: From decay pattern (2005Ah03); 282.2γ to 7/2+ 428.955-keV level, 236.1γ to (9/2+) 475.002-keV level.
723.17[@] *8*	(9/2−)	BC	Jπ: 640.6γ to 7/2- 82.597-keV level, 518.60γ to (11/2−) 204.574-keV level, band member.
750 *1*	(9/2−)	C	E(level): Identified as 7/2−[514] band member in the (α,t),(^{3}He,d) reaction (1975Er01). Jπ: From cross section ratio measurements in (α,t)(^{3}He,d) reaction (1975Er01). Expected to be

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Adopted Levels, Gammas (continued)

^{249}Bk Levels (continued)

E(level)[g]	Jπ	XREF	Comments
			a 7/2⁻[514] band member (1975Er01,2005Ah03).
767.89[c] *9*	(9/2⁻)	B	Jπ: 767.9γ to 7/2⁺ g.s., 726.1γ to 9/2⁺ 41.805-keV level; 9/2 favored as there is no decay to 5/2. π member of negative vibrational band similar to the vibrational bands at approximately the same energy in ^{248}Cm (2005Ah03,1975Ya13).
769.15 *14*	(9/2⁺)	BC	Jπ: From decay pattern and likely a member of the 3/2⁺[651] band (2005Ah03); 227.1γ to (11/2⁺) 542.095-keV level, 340.2γ to 7/2⁺ 428.955-keV level.
794 *5*		C	
829 *3*	(11/2⁻)	C	Jπ: From cross section ratio measurements in (α,t)(^{3}He,d) reaction (1975Er01).
836.07[c] *13*	(11/2⁻)	BC	Jπ: From cross section ratio measurements in (α,t)(^{3}He,d) reaction (1975Er01); band member.
899.64[e] *13*	(3/2⁻)	B	Jπ: Possible assignment 7/2[633]⊗2⁻3/2⁻ (2005Ah03); 890.5γ to 3/2 ⁻ 8.773-keV level, 860.3γ to 5/2⁻ 39.616-keV level.
911.16[c] *22*	(13/2⁻)	BC	Jπ: 755.3γ to 13/2⁺ 155.854-keV level, 817.4γ to 11/2⁺ 93.759-keV level; band member.
932.18[d] *5*	(7/2⁻)	Bc	Jπ: M1 γ to (9/2⁻) 767.89-keV level; configuration 7/2[633]⊗0⁻7/2⁻.
934.64[e] *17*	(5/2⁻)	Bc	Jπ: From decay pattern; band member.
947 *10*		C	
988.14[d] *9*	(9/2⁻)	BC	XREF: B(?). Jπ: Band member.
1055.82?[d] *7*	(11/2⁻)	B	Jπ: Band member.
1075.05[a] *8*	9/2⁺	B	Jπ: Assignment of level as 9/2[624] bandhead based on plausibility of the associated rotational constant (2005Ah03). Configuration=9/2[624].
1133.91[d] *8*	(13/2⁻)	Bc	XREF: B(?). Jπ: Band member.
1143.78[a] *15*	11/2⁺	Bc	Jπ: Band member.
1150.64 *12*	(5/2⁻)	BC	Jπ: From tentative vibrational band configuration 7/2⁺[633]⊗1⁻5/2⁻.
1186 *8*		C	
1223.01 *10*	(7/2⁺)	B	Jπ: From tentative vibrational band configuration 7/2⁺[633]⊗0⁺7/2⁺.
1227.54?[d] *10*	(15/2⁻)	B	Jπ: Band member.
1229[a] *2*	(13/2⁺)	C	Jπ: From cross section ratio measurements in (α,t)(^{3}He,d) reaction (1975Er01); band member.
1311 *5*		C	
1347 *7*		C	
1390 *6*		C	

† Band(A): 7/2[633]. A=4.657 keV *1*, B=0.0022 keV *1*, E_0=−16.83 keV *20*.
‡ Band(B): 3/2[521]. A=6.177 keV *1*, B=−0.0016 keV *1*, E_0=−0.46 keV , A_3=0.0003 *1*.
# Band(C): 5/2[642]. A=5.517 keV *2*, B=−0.00136 keV *5*, E_0=375.674keV *19*, A_5=0.0007 *1*.
@ Band(D): 1/2[530]. A=4.940 keV *5*, a=−1.581 *2*, B=0.00148 keV *1*, E_0=557.441 keV *34*. Decrease of value A from the average 6.4 for unperturbed is presumed due to Coriolis interaction.
& Band(E): 1/2[521].
[a] Band(F): 9/2[624]. A=5.99 keV *13*, B=0.013 keV *6*, E_0=1047.8 keV *5*.
[b] Band(G): 5/2[523].
[c] Band(H): 7/2[633]⊗1⁻9/2⁻. vibrational band.
[d] Band(I): 7/2[633]⊗0⁻7/2⁻. vibrational band.
[e] Band(J): 7/2[633]⊗2⁻3/2⁻. vibrational band.
[f] Seq.(K): 1/2[400]. A=6.602 keV *3*, a=0.67 *5*, B=0.00134 keV *4*, E_0=378.557 keV *23*.
[g] From least-squares fit to Eγ data by the evaluator.
[h] From ^{253}Es α decay, unless otherwise noted.

Adopted Levels, Gammas (continued)

$\gamma(^{249}Bk)$

Additional information 1.

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[#]	α[@]	Comments
8.773	3/2$^-$	(8.77)		0.0	7/2$^+$	[M2]		3.07×10^6 *4*	α(M)=2.222×10^6 *31* α(N)=6.49×10^5 *9*; α(O)=1.653×10^5 *23*; α(P)=2.97×10^4 *4*; α(Q)=1564 *22* B(M2)(W.u.)=0.016
39.616	5/2$^-$	30.85 *1*	100	8.773	3/2$^-$	M1+E2	0.114 *+29−18*	3.1×10^2 *4*	α(L)=231 *29*; α(M)=59 *8* α(N)=16.3 *23*; α(O)=4.1 *6*; α(P)=0.78 *9*; α(Q)=0.0441 *6*
41.805	9/2$^+$	41.80 *1*	100	0.0	7/2$^+$	M1		98.5 *14*	α(L)=73.8 *10*; α(M)=18.14 *25* α(N)=5.01 *7*; α(O)=1.289 *18*; α(P)=0.255 *4*; α(Q)=0.01802 *25* B(M1)(W.u.)=0.34 *+10−6* Mult.: M1+E2 with δ=0.140 *+39−23* deduced from conversion coefficient data in ^{253}Es α decay; E2 excluded as BE2W upperbounds exceeds RUL.
82.597	7/2$^-$	42.98 *1*	100 *10*	39.616	5/2$^-$	M1+E2	0.111 *+25−16*	103 *6*	α(L)=77 *5*; α(M)=19.3 *13* α(N)=5.3 *4*; α(O)=1.37 *9*; α(P)=0.263 *15*; α(Q)=0.01647 *24*
		73.82 *1*	11.9 *11*	8.773	3/2$^-$	E2		84.9 *12*	α(L)=61.2 *9*; α(M)=17.38 *24* α(N)=4.86 *7*; α(O)=1.191 *17*; α(P)=0.1964 *28*; α(Q)=0.000663 *9*
		82.61[&] *2*	0.65[&] *6*	0.0	7/2$^+$				
93.759	11/2$^+$	51.96 *1*	100 *6*	41.805	9/2$^+$	M1		51.9 *7*	α(L)=38.9 *5*; α(M)=9.56 *13* α(N)=2.64 *4*; α(O)=0.679 *10*; α(P)=0.1342 *19*; α(Q)=0.00949 *13* B(M1)(W.u.)=0.57 *+14−10* Mult.: M1+E2 with δ=0.143 *4* deduced from conversion coefficient data in ^{253}Es α decay; E2 excluded as BE2W upperbounds exceeds RUL.
		93.76 *1*	8.7 *7*	0.0	7/2$^+$	E2		27.5 *4*	α(L)=19.87 *28*; α(M)=5.64 *8* α(N)=1.579 *22*; α(O)=0.387 *5*; α(P)=0.0642 *9*; α(Q)=0.000256 *4* B(E2)(W.u.)=2.6×10^2 *+7−5*
137.712	9/2$^-$	55.11 *1*	100 *7*	82.597	7/2$^-$	M1+E2	0.146 *+38−32*	50 *4*	α(L)=37.2 *26*; α(M)=9.3 *7* α(N)=2.58 *21*; α(O)=0.66 *5*; α(P)=0.127 *8*; α(Q)=0.00786 *13*
		95.90 *2*	0.49 *6*	41.805	9/2$^+$	[E1]		0.1603 *22*	α(L)=0.1200 *17*; α(M)=0.0298 *4* α(N)=0.00813 *11*; α(O)=0.002005 *28*; α(P)=0.000346 *5*; α(Q)=1.365×10^{-5} *19*
		98.10 *1*	30.0 *26*	39.616	5/2$^-$	E2		22.31 *31*	α(L)=16.09 *23*; α(M)=4.57 *6*

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Adopted Levels, Gammas (continued)

γ(^{249}Bk) (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Mult.#	δ#	α@	Comments
									α(N)=1.279 *18*; α(O)=0.313 *4*; α(P)=0.0520 *7*; α(Q)=0.0002150 *30*
137.712	9/2⁻	137.71 *5*	0.18 *4*	0.0	7/2⁺				
155.854	13/2⁺	62.08 *1*	100 *8*	93.759	11/2⁺	M1+E2	0.16 *4*	34.9 *23*	α(L)=26.0 *16*; α(M)=6.5 *5* α(N)=1.80 *13*; α(O)=0.461 *32*; α(P)=0.089 *5*; α(Q)=0.00552 *10*
		114.04 *1*	18.1 *12*	41.805	9/2⁺	(E2)		11.12 *16*	α(L)=8.03 *11*; α(M)=2.278 *32* α(N)=0.637 *9*; α(O)=0.1564 *22*; α(P)=0.0261 *4*; α(Q)=0.0001227 *17*
204.574	(11/2⁻)	66.86 *1*	100 *10*	137.712	9/2⁻	(E2)		135.9 *19*	α(L)=98.1 *14*; α(M)=27.8 *4* α(N)=7.79 *11*; α(O)=1.906 *27*; α(P)=0.314 *4*; α(Q)=0.000997 *14*
		121.98 *1*	55 *5*	82.597	7/2⁻	(E2)		8.17 *11*	α(L)=5.90 *8*; α(M)=1.673 *23* α(N)=0.468 *7*; α(O)=0.1149 *16*; α(P)=0.01919 *27*; α(Q)=9.63×10^{-5} *13*
		162.7 *1*	0.71 *19*	41.805	9/2⁺	[E1]		0.1738 *24*	α(K)=0.1320 *19*; α(L)=0.0314 *4*; α(M)=0.00773 *11* α(N)=0.002114 *30*; α(O)=0.000528 *7*; α(P)=9.53×10^{-5} *13*; α(Q)=4.44×10^{-6} *6*
229.242	(15/2⁺)	73.43 *2*	100 *9*	155.854	13/2⁺	(M1,E2)		53 *34*	α(L)=38 *24*; α(M)=11 *7* α(N)=3.0 *20*; α(O)=0.7 *5*; α(P)=0.13 *8*; α(Q)=0.0021 *14*
		135.51 *1*	33 *4*	93.759	11/2⁺	[E2]		5.21 *7*	α(K)=0.1361 *19*; α(L)=3.66 *5*; α(M)=1.038 *15* α(N)=0.290 *4*; α(O)=0.0713 *10*; α(P)=0.01195 *17*; α(Q)=6.68×10^{-5} *9*
283.133	(13/2⁻)	78.56 *1*	100 *7*	204.574	(11/2⁻)	[M1,E2]		39 *24*	α(L)=29 *17*; α(M)=8 *5* α(N)=2.2 *14*; α(O)=0.55 *34*; α(P)=0.09 *5*; α(Q)=0.0017 *12*
		145.42 *1*	81 *5*	137.712	9/2⁻	E2		3.85 *5*	α(K)=0.1560 *22*; α(L)=2.67 *4*; α(M)=0.755 *11* α(N)=0.2114 *30*; α(O)=0.0519 *7*; α(P)=0.00872 *12*; α(Q)=5.27×10^{-5} *7*
		189.4 *1*	≈1.22	93.759	11/2⁺				
311.857	(17/2⁺)	82.61& *2*	100& *10*	229.242	(15/2⁺)				
		156.08 *8*	29 *6*	155.854	13/2⁺				
373.180	(15/2⁻)	90.05 *2*	59 *6*	283.133	(13/2⁻)				
		168.57 *8*	100 *10*	204.574	(11/2⁻)	[E2]		2.083 *29*	α(K)=0.1629 *23*; α(L)=1.387 *20*; α(M)=0.392 *6* α(N)=0.1096 *16*; α(O)=0.0270 *4*; α(P)=0.00456 *6*; α(Q)=3.28×10^{-5} *5*
377.555	(1/2⁺)	368.77 *2*	100	8.773	3/2⁻				E_γ: weighted average of 368.76 *6* from ^{249}Cm β^- decay and 368.77 *2* from ^{253}Es α decay (20.47 d).
389.170	(5/2⁺)	306.58 *8*	0.089 *8*	82.597	7/2⁻	[E1]		0.0426 *6*	α(K)=0.0334 *5*; α(L)=0.00694 *10*; α(M)=0.001695 *24* α(N)=0.000464 *7*; α(O)=0.0001173 *16*; α(P)=2.195×10^{-5} *31*; α(Q)=1.206×10^{-6} *17*
		347.34 *5*	0.74 *11*	41.805	9/2⁺	[E2]		0.1635 *23*	α(K)=0.0635 *9*; α(L)=0.0727 *10*; α(M)=0.02002 *28*

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Adopted Levels, Gammas (continued)

γ(^{249}Bk) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[#]	α[@]	Comments
									α(N)=0.00558 *8*; α(O)=0.001385 *19*; α(P)=0.0002437 *34*; α(Q)=4.66×10^{-6} *7*
389.170	(5/2$^+$)	349.56 *5*	0.52 *8*	39.616	5/2$^-$	[E1]		0.0324 *5*	α(K)=0.0255 *4*; α(L)=0.00518 *7*; α(M)=0.001263 *18* α(N)=0.000346 *5*; α(O)=8.76×10^{-5} *12*; α(P)=1.649×10^{-5} *23*; α(Q)=9.33×10^{-7} *13*
		389.17 *2*	100 *4*	0.0	7/2$^+$	M1		0.763 *11*	α(K)=0.598 *8*; α(L)=0.1232 *17*; α(M)=0.0302 *4* α(N)=0.00831 *12*; α(O)=0.002139 *30*; α(P)=0.000422 *6*; α(Q)=2.95×10^{-5} *4*
									E_γ: weighted average of 389.0 *2* from ^{249}Cm β^- decay and 389.17 *2* from ^{253}Es α decay (20.47 d) β^- decay.
410.68	(3/2$^+$)	402.0[&] *1*	100[&]	8.773	3/2$^-$				
421.368	(5/2$^+$)	(43.7)		377.555	(1/2$^+$)	[E2]		1051 *15*	α(L)=759 *11*; α(M)=214.8 *30* α(N)=60.1 *8*; α(O)=14.69 *21*; α(P)=2.400 *34*; α(Q)=0.00607 *8*
		421.39 *3*	100 *11*	0.0	7/2$^+$				E_γ: weighted average of 421.3 *2* from ^{249}Cm β^- decay and 421.39 *3* from ^{253}Es α decay (20.47 d).
428.955	(7/2$^+$)	291.26 *8*	0.179 *16*	137.712	9/2$^-$	[E1]		0.0475 *7*	α(K)=0.0371 *5*; α(L)=0.00779 *11*; α(M)=0.001905 *27* α(N)=0.000522 *7*; α(O)=0.0001318 *18*; α(P)=2.459×10^{-5} *34*; α(Q)=1.336×10^{-6} *19*
		335.20 *5*	0.74 *8*	93.759	11/2$^+$	[E2]		0.1816 *25*	α(K)=0.0674 *9*; α(L)=0.0830 *12*; α(M)=0.02291 *32* α(N)=0.00639 *9*; α(O)=0.001584 *22*; α(P)=0.000278 *4*; α(Q)=5.07×10^{-6} *7*
		346.37 *5*	0.84 *11*	82.597	7/2$^-$	[E1]		0.0330 *5*	α(K)=0.0260 *4*; α(L)=0.00528 *7*; α(M)=0.001289 *18* α(N)=0.000353 *5*; α(O)=8.94×10^{-5} *13*; α(P)=1.682×10^{-5} *24*; α(Q)=9.50×10^{-7} *13*
		387.15 *2*	100 *5*	41.805	9/2$^+$	M1		0.774 *11*	α(K)=0.607 *8*; α(L)=0.1250 *18*; α(M)=0.0306 *4* α(N)=0.00843 *12*; α(O)=0.002170 *30*; α(P)=0.000428 *6*; α(Q)=2.99×10^{-5} *4*
		428.95 *2*	29.2 *11*	0.0	7/2$^+$	M1+E2	0.29 *18*	0.55 *5*	α(K)=0.43 *4*; α(L)=0.090 *6*; α(M)=0.0220 *15* α(N)=0.0061 *4*; α(O)=0.00156 *10*; α(P)=0.000307 *22*; α(Q)=2.10×10^{-5} *21*
473.66	(17/2$^-$)	100.5 *3*	≈80	373.180	(15/2$^-$)				
		190.5 *3*	≈100	283.133	(13/2$^-$)				
475.002	(9/2$^+$)	270.46 *8*	0.33 *4*	204.574	(11/2$^-$)				
		319.16 *5*	0.67 *6*	155.854	13/2$^+$	[E2]		0.2106 *30*	α(K)=0.0731 *10*; α(L)=0.0999 *14*; α(M)=0.0276 *4* α(N)=0.00771 *11*; α(O)=0.001911 *27*; α(P)=0.000334 *5*; α(Q)=5.70×10^{-6} *8*
		337.30 *5*	0.95 *7*	137.712	9/2$^-$	[E1]		0.0349 *5*	α(K)=0.0274 *4*; α(L)=0.00560 *8*; α(M)=0.001367 *19* α(N)=0.000375 *5*; α(O)=9.48×10^{-5} *13*; α(P)=1.781×10^{-5} *25*; α(Q)=1.000×10^{-6} *14*

$^{249}_{97}Bk_{152}$-6

Adopted Levels, Gammas (continued)

γ(^{249}Bk) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[#]	α[@]	Comments
475.002	(9/2$^+$)	381.23 *2*	100 *6*	93.759	11/2$^+$	(M1)		0.807 *11*	α(K)=0.633 *9*; α(L)=0.1305 *18*; α(M)=0.0319 *4* α(N)=0.00880 *12*; α(O)=0.002264 *32*; α(P)=0.000447 *6*; α(Q)=3.12×10^{-5} *4*
		392.42 *5*	0.80 *7*	82.597	7/2$^-$	[E1]		0.0256 *4*	α(K)=0.02020 *28*; α(L)=0.00403 *6*; α(M)=0.000981 *14* α(N)=0.000269 *4*; α(O)=6.82×10^{-5} *10*; α(P)=1.289×10^{-5} *18*; α(Q)=7.48×10^{-7} *10*
		433.20 *2*	49 *4*	41.805	9/2$^+$	(M1)		0.569 *8*	α(K)=0.447 *6*; α(L)=0.0918 *13*; α(M)=0.02244 *31* α(N)=0.00619 *9*; α(O)=0.001592 *22*; α(P)=0.000314 *4*; α(Q)=2.194×10^{-5} *31*
		475.00 *5*	5.8 *4*	0.0	7/2$^+$	(M1)		0.443 *6*	α(K)=0.348 *5*; α(L)=0.0713 *10*; α(M)=0.01743 *24* α(N)=0.00480 *7*; α(O)=0.001236 *17*; α(P)=0.0002439 *34*; α(Q)=1.703×10^{-5} *24*
498.67	(7/2$^+$)	70.0	<6.3	428.955	(7/2$^+$)				
		416.3 *2*	8.8 *19*	82.597	7/2$^-$				
		456.84 *8*	100 *13*	41.805	9/2$^+$				
		498.6 *2*	36 *4*	0.0	7/2$^+$				
519.190	(9/2$^+$)	89.9	<0.45	428.955	(7/2$^+$)				
		425.43 *2*	100 *7*	93.759	11/2$^+$	[E2]		0.0934 *13*	α(K)=0.0452 *6*; α(L)=0.0352 *5*; α(M)=0.00956 *13* α(N)=0.00266 *4*; α(O)=0.000663 *9*; α(P)=0.0001184 *17*; α(Q)=2.93×10^{-6} *4*
		436.8 *4*	≈0.45	82.597	7/2$^-$				
		477.40 *5*	51 *5*	41.805	9/2$^+$	[M1,E2]		0.25 *18*	α(K)=0.19 *15*; α(L)=0.047 *23*; α(M)=0.012 *5* α(N)=0.0033 *15*; α(O)=8.E−4 *4*; α(P)=1.6×10^{-4} *8*; α(Q)=1.0×10^{-5} *7*
542.095	(11/2$^+$)	258.9 *2*	≈0.31	283.133	(13/2$^-$)				
		312.7 *1*	0.70 *9*	229.242	(15/2$^+$)	[E2]		0.2243 *31*	α(K)=0.0756 *11*; α(L)=0.1080 *15*; α(M)=0.0299 *4* α(N)=0.00835 *12*; α(O)=0.002068 *29*; α(P)=0.000361 *5*; α(Q)=6.00×10^{-6} *8*
		404.4 *1*	1.25 *13*	137.712	9/2$^-$	[E1]		0.02406 *34*	α(K)=0.01903 *27*; α(L)=0.00378 *5*; α(M)=0.000919 *13* α(N)=0.0002519 *35*; α(O)=6.39×10^{-5} *9*; α(P)=1.210×10^{-5} *17*; α(Q)=7.06×10^{-7} *10*
		448.34 *2*	100 *5*	93.759	11/2$^+$	(M1+E2)	0.52 *+17−18*	0.43 *5*	α(K)=0.33 *4*; α(L)=0.072 *6*; α(M)=0.0178 *14* α(N)=0.0049 *4*; α(O)=0.00126 *10*; α(P)=0.000246 *21*; α(Q)=1.63×10^{-5} *19*
		500.30[&] *5*	22.3[&] *19*	41.805	9/2$^+$	(M1)		0.384 *5*	α(K)=0.302 *4*; α(L)=0.0618 *9*; α(M)=0.01512 *21* α(N)=0.00417 *6*; α(O)=0.001072 *15*; α(P)=0.0002116 *30*; α(Q)=1.478×10^{-5} *21*
558.17	(3/2$^-$)	136.81 *2*	44.3[‡] *34*	421.368	(5/2$^+$)	[E1]		0.257 *4*	α(K)=0.1920 *27*; α(L)=0.0484 *7*; α(M)=0.01196 *17* α(N)=0.00327 *5*; α(O)=0.000814 *11*; α(P)=0.0001449 *20*; α(Q)=6.42×10^{-6} *9*

$^{249}_{97}Bk_{152}$-7

Adopted Levels, Gammas (continued)

γ(^{249}Bk) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	α[@]	Comments
								E_γ: weighted average of 136.9 *1* from ^{249}Cm β^- decay and 136.81 *2* from ^{253}Es α decay (20.47 d).
558.17	(3/2$^-$)	168.8 *2*	2.5[‡] *2*	389.170	(5/2$^+$)	[E1]	0.1599 *23*	α(K)=0.1217 *17*; α(L)=0.0286 *4*; α(M)=0.00705 *10* α(N)=0.001929 *28*; α(O)=0.000482 *7*; α(P)=8.72×10^{-5} *12*; α(Q)=4.11×10^{-6} *6* E_γ: weighted average of 168.8 *2* from ^{249}Cm β^- decay and 168.8 *2* from ^{253}Es α decay (20.47 d).
		180.51 *8*	22.7[‡] *16*	377.555	(1/2$^+$)	[E1]	0.1373 *19*	α(K)=0.1049 *15*; α(L)=0.02426 *34*; α(M)=0.00597 *8* α(N)=0.001633 *23*; α(O)=0.000409 *6*; α(P)=7.43×10^{-5} *10*; α(Q)=3.57×10^{-6} *5* E_γ: weighted average of 180.5 *1* from ^{249}Cm β^- decay and 180.52 *8* from ^{253}Es α decay (20.47 d).
		475.4 *2*	8.2[‡] *14*	82.597	7/2$^-$	[E2]	0.0705 *10*	α(K)=0.0374 *5*; α(L)=0.02420 *34*; α(M)=0.00652 *9* α(N)=0.001815 *26*; α(O)=0.000453 *6*; α(P)=8.16×10^{-5} *11*; α(Q)=2.296×10^{-6} *32*
		518.56 *8*	100[‡] *7*	39.616	5/2$^-$	[M1,E2]	0.20 *15*	α(K)=0.15 *12*; α(L)=0.037 *19*; α(M)=0.009 *4* α(N)=0.0026 *12*; α(O)=6.6×10^{-4} *32*; α(P)=1.3×10^{-4} *7*; α(Q)=8.E−6 *6* E_γ: weighted average of 518.5 *1* from ^{249}Cm β^- decay and 518.60 *8* from ^{253}Es α decay (20.47 d).
		549.40 *5*	34[‡] *6*	8.773	3/2$^-$	[M1,E2]	0.17 *12*	α(K)=0.13 *10*; α(L)=0.032 *16*; α(M)=0.008 *4* α(N)=0.0022 *11*; α(O)=5.6×10^{-4} *27*; α(P)=1.1×10^{-4} *6*; α(Q)=7.E−6 *5* E_γ: from ^{253}Es α decay (20.47 d). Other: 549.4 *1* from ^{249}Cm β^- decay.
569.21	(1/2$^-$)	158.6 *1*	0.35[‡] *5*	410.68	(3/2$^+$)	[E1]	0.1842 *26*	α(K)=0.1397 *20*; α(L)=0.0334 *5*; α(M)=0.00824 *12* α(N)=0.002253 *32*; α(O)=0.000563 *8*; α(P)=0.0001013 *14*; α(Q)=4.69×10^{-6} *7*
		191.6 *1*	1.19[‡] *11*	377.555	(1/2$^+$)	[E1]	0.1199 *17*	α(K)=0.0920 *13*; α(L)=0.02097 *29*; α(M)=0.00516 *7* α(N)=0.001411 *20*; α(O)=0.000354 *5*; α(P)=6.45×10^{-5} *9*; α(Q)=3.15×10^{-6} *4* E_γ: weighted average of 191.6 *1* from ^{249}Cm β^- decay and 191.7 *2* from ^{253}Es α decay (20.47 d).
		529.7 *2*	0.83 *10*	39.616	5/2$^-$	[E2]	0.0544 *8*	α(K)=0.0312 *4*; α(L)=0.01707 *24*; α(M)=0.00456 *6* α(N)=0.001268 *18*; α(O)=0.000317 *4*; α(P)=5.76×10^{-5} *8*; α(Q)=1.823×10^{-6} *26* E_γ: weighted average of 529.5 *2* from ^{249}Cm β^- decay and 530.0 *3* from ^{253}Es α decay (20.47 d).
		560.42 *5*	100[‡] *7*	8.773	3/2$^-$	(M1+E2)	0.198 *30*	α(K)=0.152 *25*; α(L)=0.034 *4*; α(M)=0.0085 *9* α(N)=0.00234 *26*; α(O)=0.00060 *7*; α(P)=0.000117 *14*; α(Q)=7.5×10^{-6} *12* E_γ: weighted average of 560.4 *1* from ^{249}Cm β^- decay and 560.42 *5* from ^{253}Es α decay (20.47 d).

$^{249}_{97}Bk_{152}$-8

Adopted Levels, Gammas (continued)

$\gamma(^{249}Bk)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[#]	α[@]	Comments
597.836	(13/2$^+$)	55.6	<0.3	542.095	(11/2$^+$)				
		78.8	<0.3	519.190	(9/2$^+$)				
		122.1	<0.3	475.002	(9/2$^+$)				
		168.8 *2*	≈1.4	428.955	(7/2$^+$)				
		368.77 *2*	100 *6*	229.242	(15/2$^+$)	(M1,E2)		0.5 *4*	α(K)=0.38 *32*; α(L)=0.10 *4*; α(M)=0.026 *9* α(N)=0.0071 *26*; α(O)=0.0018 *7*; α(P)=3.4×10^{-4} *15*; α(Q)=1.9×10^{-5} *15* E$_\gamma$: Poor fit possibly due to doublet. Level-energy difference=368.594.
		441.83[&] *2*	21.9[&] *22*	155.854	13/2$^+$	(M1)		0.539 *8*	α(K)=0.423 *6*; α(L)=0.0869 *12*; α(M)=0.02126 *30* α(N)=0.00586 *8*; α(O)=0.001508 *21*; α(P)=0.000298 *4*; α(Q)=2.078×10^{-5} *29* E$_\gamma$: Poor fit possibly due to doublet. Level-energy difference=441.982.
		503.93 *5*	5.8 *6*	93.759	11/2$^+$	[M1,E2]		0.22 *16*	α(K)=0.16 *13*; α(L)=0.040 *20*; α(M)=0.010 *5* α(N)=0.0028 *13*; α(O)=7.1×10^{-4} *34*; α(P)=1.4×10^{-4} *7*; α(Q)=8.E−6 *6*
		555.8 *3*	0.3 *1*	41.805	9/2$^+$				
606.69	(7/2$^-$)	87.5 *2*	≈1.25	519.190	(9/2$^+$)				
		177.6	<1.25	428.955	(7/2$^+$)				
		185.3 *1*	10.0 *25*	421.368	(5/2$^+$)				
		402.0[&] *1*	6.3[&] *13*	204.574	(11/2$^-$)				
		469.00 *5*	100 *9*	137.712	9/2$^-$	[M1,E2]		0.27 *19*	α(K)=0.20 *16*; α(L)=0.050 *24*; α(M)=0.012 *6* α(N)=0.0034 *15*; α(O)=9.E−4 *4*; α(P)=1.7×10^{-4} *8*; α(Q)=1.0×10^{-5} *8*
		524.10 *5*	65 *6*	82.597	7/2$^-$	[M1,E2]		0.20 *14*	α(K)=0.15 *12*; α(L)=0.036 *18*; α(M)=0.009 *4* α(N)=0.0025 *12*; α(O)=6.4×10^{-4} *31*; α(P)=1.2×10^{-4} *6*; α(Q)=7.E−6 *6*
		567.10[&] *5*	56[&] *4*	39.616	5/2$^-$	[M1,E2]		0.16 *11*	α(K)=0.12 *9*; α(L)=0.029 *15*; α(M)=0.0072 *35* α(N)=0.0020 *10*; α(O)=5.1×10^{-4} *25*; α(P)=1.0×10^{-4} *5*; α(Q)=6.E−6 *4*
624.30	(5/2$^+$)	203.1[&] *5*	≈10[&]	421.368	(5/2$^+$)				
		235.1 *2*	≈100	389.170	(5/2$^+$)				
		624.3 *4*	23 *7*	0.0	7/2$^+$				
624.93	(5/2$^-$)	203.1[&] *5*	≈0.88[&]	421.368	(5/2$^+$)				
		542.30 *5*	65 *6*	82.597	7/2$^-$				
		585.35 *5*	100 *6*	39.616	5/2$^-$	[M1,E2]		0.15 *10*	α(K)=0.11 *9*; α(L)=0.026 *14*; α(M)=0.0066 *33* α(N)=0.0018 *9*; α(O)=4.7×10^{-4} *23*; α(P)=9.E−5 *5*; α(Q)=6.E−6 *4*
		616.1 *2*	10.6 *9*	8.773	3/2$^-$	[M1,E2]		0.13 *9*	α(K)=0.10 *7*; α(L)=0.023 *12*; α(M)=0.0057 *29* α(N)=0.0016 *8*; α(O)=4.0×10^{-4} *20*; α(P)=8.E−5 *4*; α(Q)=4.9×10^{-6} *35*
643.10	(1/2$^-$)	85.2 *2*	0.360 *33*	558.17	(3/2$^-$)				
		231.7	<21.3	410.68	(3/2$^+$)				
		264.1	<21.3	377.555	(1/2$^+$)				
		603.4 *2*	0.43 *6*	39.616	5/2$^-$				
		634.3 *1*	100 *9*	8.773	3/2$^-$				E$_\gamma$: weighted average of 634.3 *1* from ^{249}Cm β^- decay and 634.2 *2* from ^{253}Es α decay (20.47 d).

Adopted Levels, Gammas (continued)

γ(^{249}Bk) (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Comments
654.1		134.9	100	519.190	(9/2$^+$)	
661.51	(3/2$^-$)	283.7& *2*	≈2.8×10^2&	377.555	(1/2$^+$)	
		621.9 *1*	100 *11*	39.616	5/2$^-$	E_γ: weighted average of 621.9 *1* from ^{249}Cm β^- decay and 621.7 *2* from ^{253}Es α decay (20.47 d).
		652.8 *1*	67 *8*	8.773	3/2$^-$	E_γ: weighted average of 652.8 *1* from ^{249}Cm β^- decay and 652.7 *2* from ^{253}Es α decay (20.47 d).
671.089	(13/2$^+$)	152.2 *2*	≈5.7	519.190	(9/2$^+$)	
		441.83& *2*	<2.49×10^3&	229.242	(15/2$^+$)	
		515.5 *1*	100 *17*	155.854	13/2$^+$	
		577.6 *2*	43 *6*	93.759	11/2$^+$	
672.81	(5/2$^-$)	244.0 *2*	≈20.0	428.955	(7/2$^+$)	
		283.7& *2*	≈100&	389.170	(5/2$^+$)	
		590.1 *3*	≈20.0	82.597	7/2$^-$	
		633.0 *3*	≈40	39.616	5/2$^-$	
		664.0 *2*	100 *10*	8.773	3/2$^-$	
		672.8 *2*	28 *6*	0.0	7/2$^+$	
701.85	(15/2$^+$)	472.6 *2*	100 *25*	229.242	(15/2$^+$)	
		545.9 *3*	38 *8*	155.854	13/2$^+$	
		608.2 *3*	≈12.5	93.759	11/2$^+$	
703.42	(7/2$^+$)	228.4 *2*	≈42	475.002	(9/2$^+$)	
		274.5 *2*	≈42	428.955	(7/2$^+$)	
		314.2 *2*	≈83	389.170	(5/2$^+$)	
		661.6 *2*	100 *17*	41.805	9/2$^+$	
		703.6 *4*	≈8.3	0.0	7/2$^+$	
704.84	(11/2$^-$)	98.2 *2*	≈0.21	606.69	(7/2$^-$)	
		185.6 *2*	≈0.7	519.190	(9/2$^+$)	
		421.7 *2*	≈5.6	283.133	(13/2$^-$)	
		500.30& *5*	<109&	204.574	(11/2$^-$)	
		567.10& *5*	<33.6&	137.712	9/2$^-$	
709.11	(5/2$^-$)	102.8 *3*	≈1.7	606.69	(7/2$^-$)	
		300.3	<17	410.68	(3/2$^+$)	E_γ: Poor fit. Level energy difference=298.43 *14*.
		330.7	<17	377.555	(1/2$^+$)	
		571.0 *3*	≈17	137.712	9/2$^-$	
		626.5 *2*	69 *5*	82.597	7/2$^-$	
		669.5 *2*	100 *9*	39.616	5/2$^-$	
		700.3 *3*	6.9 *17*	8.773	3/2$^-$	
711.15	(7/2$^-$)	192.0 *2*	≈30	519.190	(9/2$^+$)	
		236.1 *2*	≈100	475.002	(9/2$^+$)	
		282.2 *2*	≈50	428.955	(7/2$^+$)	
723.17	(9/2$^-$)	204.0	<29	519.190	(9/2$^+$)	

$^{249}_{97}Bk_{152}$-10

Adopted Levels, Gammas (continued)

γ(^{249}Bk) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	α[@]	Comments
723.17	(9/2⁻)	247.7	<29	475.002	(9/2⁺)			
		518.60 *8*	<3.3×10^3	204.574	(11/2⁻)			
		640.6 *2*	100 *9*	82.597	7/2⁻			
767.89	(9/2⁻)	726.1 *2*	17.4 *13*	41.805	9/2⁺			
		767.9 *1*	100 *7*	0.0	7/2⁺			
769.15	(9/2⁺)	227.1 *2*	≈100	542.095	(11/2⁺)			
		294.1 *2*	≈50	475.002	(9/2⁺)			
		340.2 *5*	≈25.0	428.955	(7/2⁺)			
836.07	(11/2⁻)	742.4 *3*	33 *4*	93.759	11/2⁺			
		794.2 *2*	100 *12*	41.805	9/2⁺			
		836.1 *2*	23.9 *31*	0.0	7/2⁺			
899.64	(3/2⁻)	227.0 *3*	≈83	672.81	(5/2⁻)			
		860.3 *2*	100 *7*	39.616	5/2⁻			
		890.5[&] *2*	<400[&]	8.773	3/2⁻			
911.16	(13/2⁻)	755.3 *3*	24 *4*	155.854	13/2⁺			
		817.4 *3*	100 *10*	93.759	11/2⁺			
932.18	(7/2⁻)	164.4 *3*	≈0.73	767.89	(9/2⁻)	[M1]	8.44 *13*	α(K)=6.60 *10*; α(L)=1.381 *21*; α(M)=0.339 *5* α(N)=0.0934 *14*; α(O)=0.0240 *4*; α(P)=0.00474 *7*; α(Q)=0.000333 *5*
		838.5 *3*	2.9 *5*	93.759	11/2⁺			
		890.5[&] *2*	54[&] *5*	41.805	9/2⁺			
		932.17 *5*	100 *5*	0.0	7/2⁺			
934.64	(5/2⁻)	261.7 *3*	≈26	672.81	(5/2⁻)			
		852.1 *2*	100 *7*	82.597	7/2⁻			
988.14	(9/2⁻)	894.5 *2*	67 *7*	93.759	11/2⁺			
		946.3 *1*	100 *7*	41.805	9/2⁺			
1055.82?	(11/2⁻)	899.9 *1*	100 *7*	155.854	13/2⁺			
		962.1 *1*	3.3 *6*	93.759	11/2⁺			
		1014.4 *5*	≈2.8	41.805	9/2⁺			
1075.05	9/2⁺	981.3 *3*	≈1.72	93.759	11/2⁺			
		(1033.3 *calc*)	17.2 *calc*	41.805	9/2⁺			
		1075.05 *8*	100 *7*	0.0	7/2⁺			
1133.91	(13/2⁻)	1040.15 *8*	100	93.759	11/2⁺			
1143.78	11/2⁺	1050.0 *2*	30 *4*	93.759	11/2⁺			
		1102.0 *2*	100 *14*	41.805	9/2⁺			
1150.64	(5/2⁻)	721.6 *2*	48 *7*	428.955	(7/2⁺)			
		761.5 *2*	100 *10*	389.170	(5/2⁺)			
		1150.7 *2*	25.8 *26*	0.0	7/2⁺			
1223.01	(7/2⁺)	455.1	<21.3	767.89	(9/2⁻)			
		748.0	<21.3	475.002	(9/2⁺)			
		794.0 *2*	32 *4*	428.955	(7/2⁺)			
		833.8 *2*	100 *9*	389.170	(5/2⁺)			

$^{249}_{97}Bk_{152}$-11

Adopted Levels, Gammas (continued)

$\gamma(^{249}Bk)$ (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π
1223.01	$(7/2^+)$	1181.3 *2*	21.3 *21*	41.805	$9/2^+$
		1223.0 *2*	12.8 *13*	0.0	$7/2^+$
1227.54?	$(15/2^-)$	998.3 *1*	100	229.242	$(15/2^+)$

† From ^{253}Es α decay (2005Ah03,1975Ah01), except as noted.
‡ From ^{249}Cm β-decay (2005Ah03).
# From conversion coefficient data in ^{253}Es α decay. See comments when RUL is used to exclude multis.
@ Additional information 2.
& Multiply placed with undivided intensity.

$^{249}_{97}Bk_{152}$-12

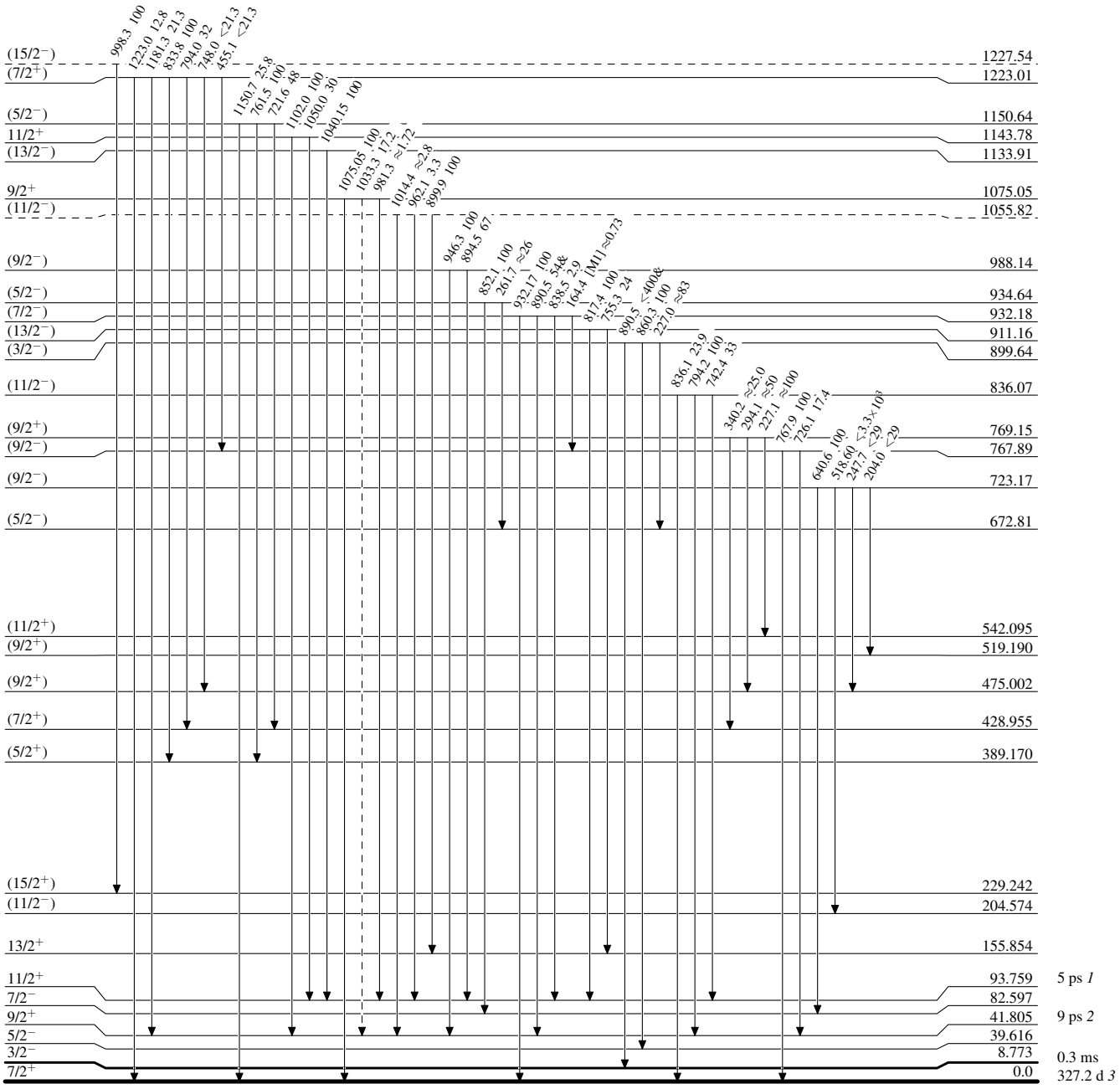
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

γ Decay (Uncertain)

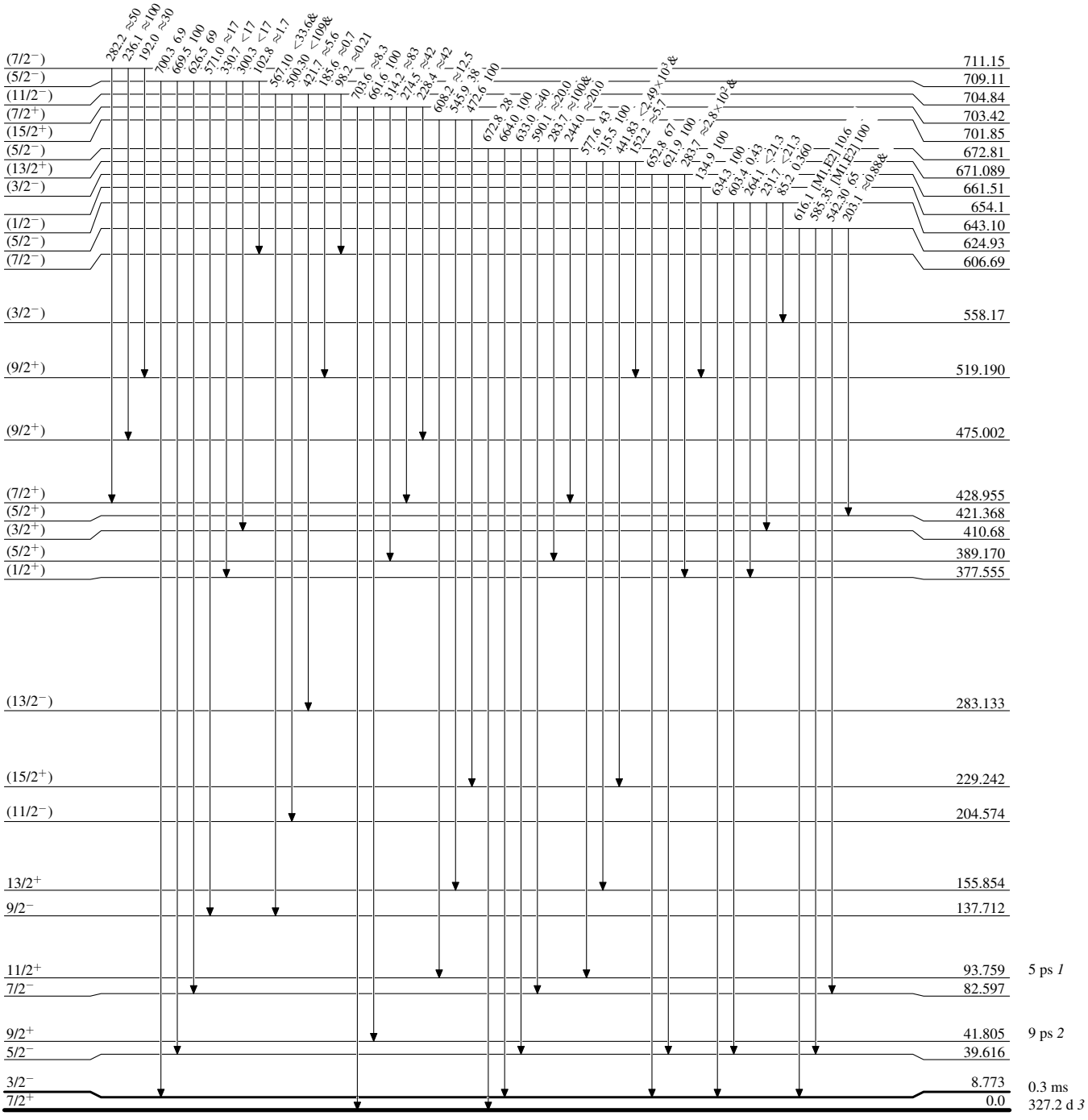


$^{249}_{97}Bk_{152}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

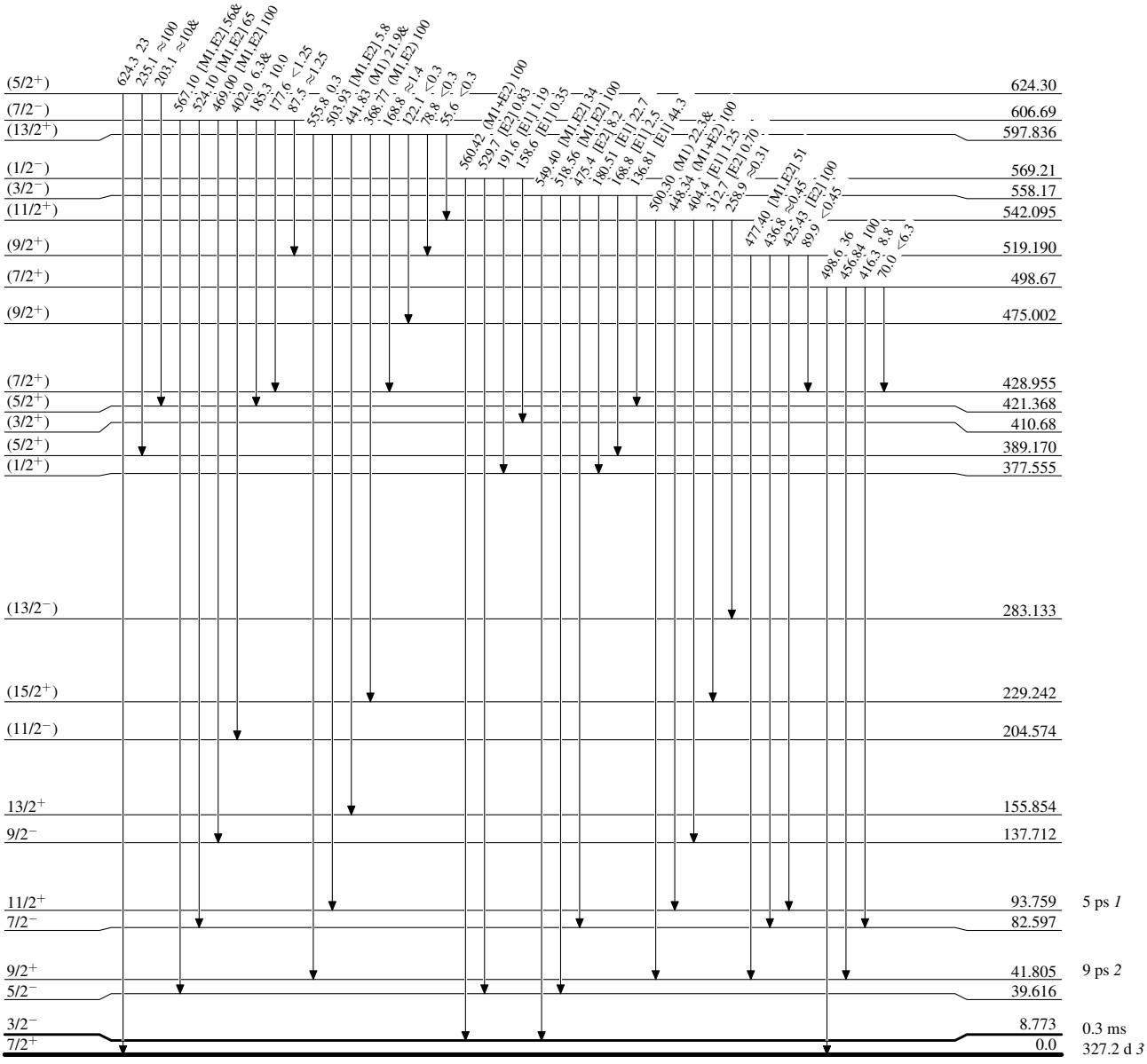


$^{249}_{97}Bk_{152}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given



$^{249}_{97}Bk_{152}$

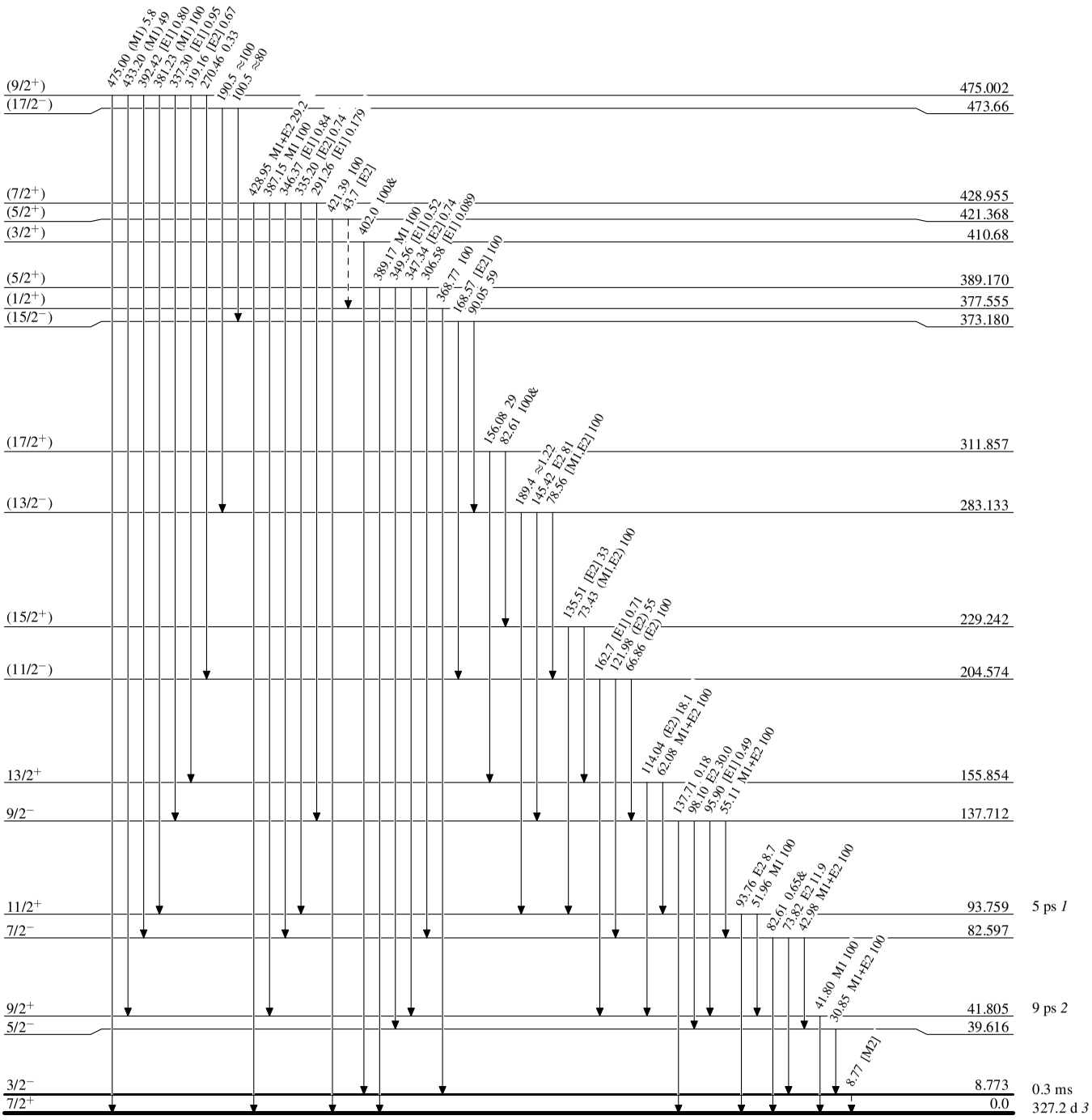
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

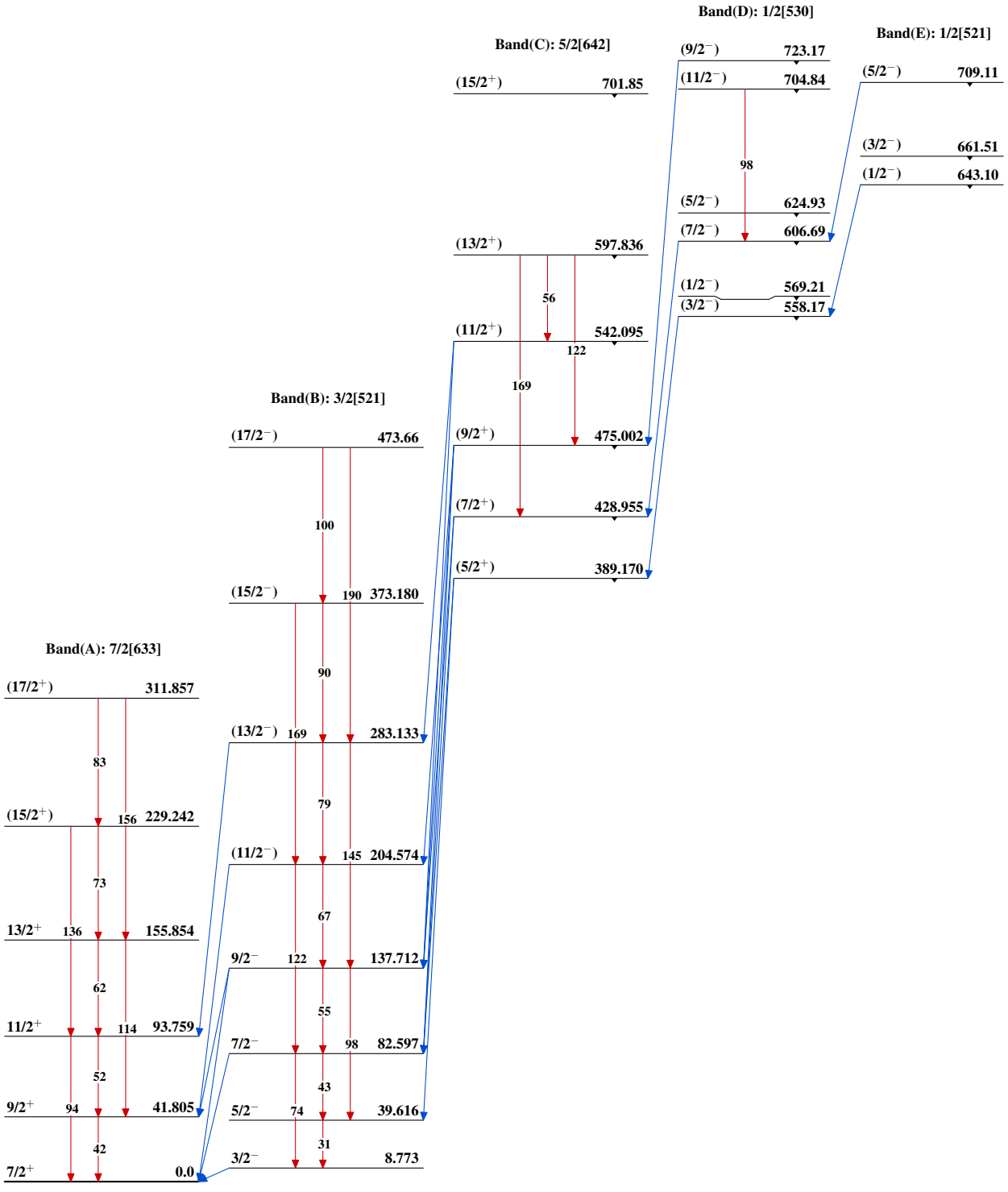
Legend

- - - - - - ► γ Decay (Uncertain)



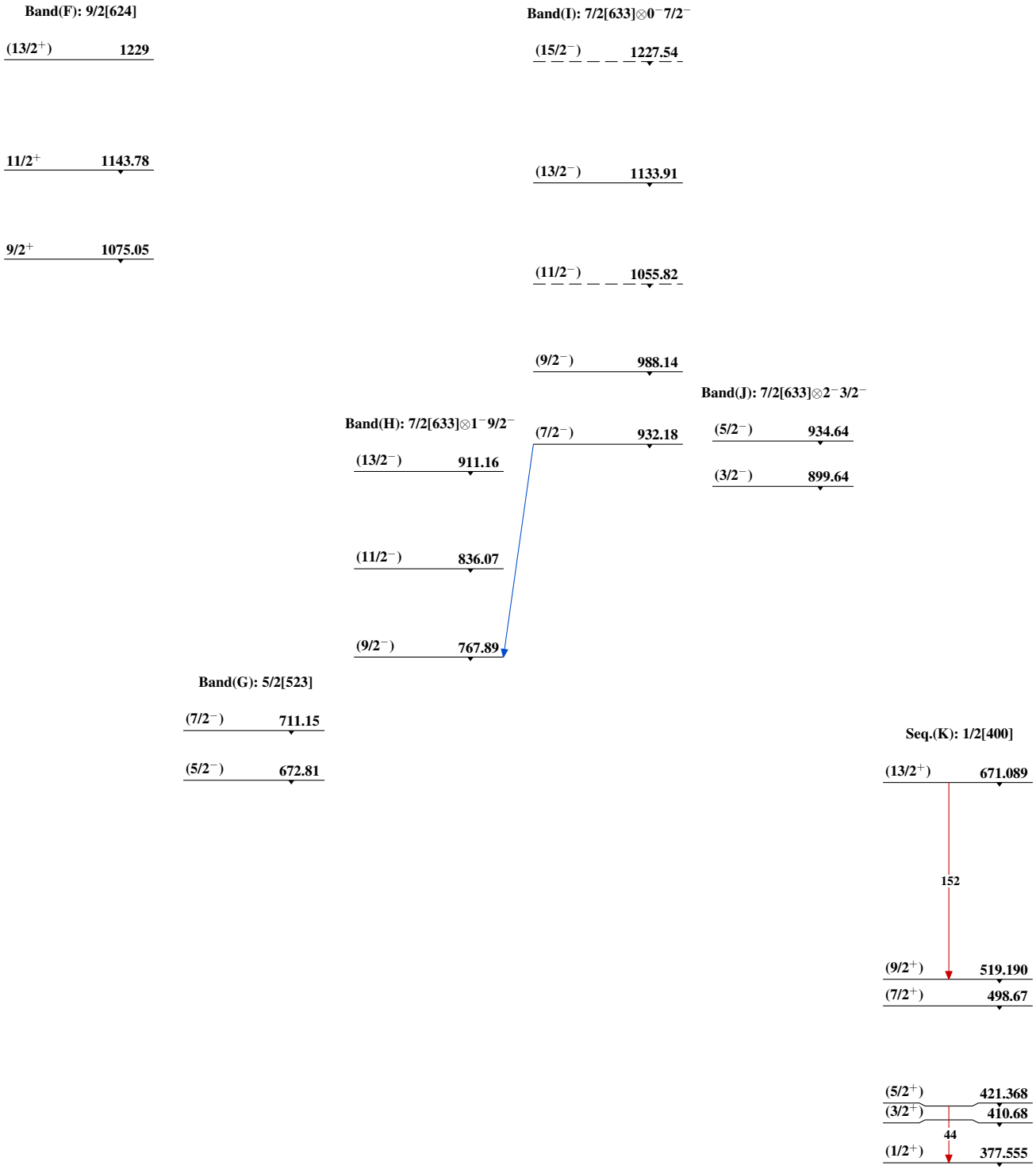
$^{249}_{97}Bk_{152}$

Adopted Levels, Gammas



$^{249}_{97}Bk_{152}$

Adopted Levels, Gammas (continued)



$^{249}_{97}Bk_{152}$