Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	N. Nica and B. Singh	NDS 181, 1 (2022)	9-Mar-2022

Q(β^-)=6414 *22*; S(n)=3469 *20*; S(p)=12243 *20*; Q(α)=−2486 *20* 2021Wa16
S(2n)=8890 *21*, S(2p)=23349 *23*, Q(β^-n)=886 *20* (2021Wa16).

^{147}Ba Levels

Cross Reference (XREF) Flags

- A ^{147}Cs β^- decay
- B ^{148}Cs β^-n decay
- C ^{248}Cm SF decay
- D ^{252}Cf SF decay

From 1993Ru01. The measured values can be grouped in two mutually consistent groups, but discrepant with each other:

Group 1		Group 2	
0.921 s *47*	(2017Wu04, β)		
0.894 s *10*	(1993Ru01, n,β)	0.70 s *3*	(1982Ga24, n,β)
0.892 s *10*	(1986ReZU, nβ)	0.70 s *4*	(1981En05 n,β)
0.91 s *4*	(1983Re10, n,β)	0.72 s *7*	(1979En02, β)
0.93 s 5	(1981ShZH, β,γ)	0.70 s *6*	(1978Wo09, β)
0.894 s 7	(w.av.)	0.70 s *2*	(w.av.)

(other: 0.893 s *1* (1986Wa17), superseded by 1986ReZU)
The methods used (after ref. keynumber) are summarized as follows:
n - measured neutrons, β - measured β^- decay, γ - measured γ rays (comma separated means single, nβ means nβ coin).
The adopted result coincides with group 1 weighted average which contains the more recent results obtained by more divers methods.
The evaluator adopted the original result from 1986ReZU, 0.892 s *1*, with ten times increased unc due to insufficient detail to justify such precision.

E(level)[†]	J$^\pi$	T$_{1/2}$	XREF	Comments
0.0	(5/2$^-$)	0.894 s *7*	ABCD	%β^-=100; %β^-n=0.06 *5* J$^\pi$: (5/2$^-$), assigned by 2013Rz01 from (13/2$^+$) for 451 level based on systematics (see discussion at level), decayed by the 90.7 E2 γ to (9/2$^+$) 360 level, than by the 250.5γ-109.7γ cascade of stretched dipoles to the g.s., hence J=(5/2) for the g.s. ^{147}Ba. The absence of a 360γ from the 360 level to the g.s. allows 2013Rz01 to state that the g.s. and 360 levels are of opposite parities, whence the tentative assignment of the g.s. J^π=(5/2$^-$). This rules out previous assignment (in 2009Ni02 evaluation): (3/2$^-$), proposed by 2005Sy01 (β^- decay), based on shell correction approach with axially-deformed Woods-Saxon potential (for β_2≈0.18, β_3≈ 0.11, β_4≈0.07), and 3/2$^-$ for ^{149}Ce g.s. (2002Sy01). Other considered value: (3/2$^+$) based on 3/2[651] (1995Zh34), is discrepant with 1996Ba34 (same authors) which show π=−. No evidence of static octupole deformation in g.s. (2013Rz01) since no parity doublets were found in the low-energy region. %β^-n: unweighted average of 0.110 *16* (1993Ru01) and 0.019 *1* (1986Wa17) with uncertainty taken to cover both values. Others: 0.021 *18* (1986ReZR) and 0.030 *16* (1983Re10) (superseded by 1986Wa17), 5.2 *5* (1979RuZQ) (superseded by 1993Ru01), 4.7 *11* (1983MaYQ), <0.001 (1982Ga24), 5.2 *5* (1981En05).
46.22[a] *5*	(3/2$^-$,5/2$^-$)	0.51 ns *8*	A C	J$^\pi$: M1 γ to (5/2$^-$); 7/2 is excluded by 2013Rz01 (^{248}Cm SF Decay dataset)

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Adopted Levels, Gammas (continued)

^{147}Ba Levels (continued)

E(level)[†]	J^{π}	$T_{1/2}$	XREF	Comments
				based on observed branching (also 3/2 is preferred since this band is weakly populated in fission, suggesting its non-yrast character). $T_{1/2}$: from 2005Sy01 (β^- decay data set).
74.9? *8*			A	
85.39[‡] *5*	(5/2$^-$)	0.37 ns *10*	A C	J^{π}: E2 153.4γ from (9/2$^-$), 239 level. $T_{1/2}$: from 2005Sy01 (β^- decay data set).
109.81 *5*	(7/2$^-$)	1.4 ns	ABCD	J^{π}: M1+E2 γ to (5/2$^-$), g.s. $T_{1/2}$: from 1981ScZM (β^- decay data set).
185.80[a] *6*	(7/2$^-$)		A C	J^{π}: M1,E2 γ to (5/2$^-$), g.s.
198.9? *8*			A	
238.79[‡] *6*	(9/2$^-$)		A C	J^{π}: (9/2) from unstretched ΔJ=0, D 121.4γ from (9/2$^+$), 360 level; negative parity from (E2) 238.6γ to (5/2$^-$) g.s.
279.19[#] *9*	(9/2$^-$)		A C	J^{π}: ΔJ=1, M1+E2 169.6γ to (7/2$^-$), 110 level.
292.10 *6*	($^-$)	0.3 ns	A	J^{π}: M1,E2 γ to 46, (1/2$^-$,3/2$^-$,5/2$^-$). $T_{1/2}$: from 1981ScZM (β^- decay).
319.4? *8*			A	
327.40 *6*			A	
360.01[&] *10*	(9/2$^+$)		A CD	J^{π}: E2 90.7γ from (13/2$^+$), 451 level.
365.62 *8*	($^-$)		A	J^{π}: M1,E2 γ to 85, (1/2$^-$,3/2$^-$,5/2$^-$).
397.48 *7*	($^-$)		A	J^{π}: M1+E2 γ to 46, (1/2$^-$,3/2$^-$,5/2$^-$).
426.10 *7*			A	
427.4?[a] *3*			C	
450.71[&] *23*	(13/2$^+$)		C	J^{π}: calculated alignment of 5.4 $\hbar$ relative to g.s. of ^{146}Ba (consistent with configuration originating from $i_{13/2}$ neutron orbital); this alignment is nealy identical with the alignment in the 3/2$^+$[651] band in ^{149}Ce and supports (13/2$^+$) adopted here.
451.32 *7*			A	
462.08 *7*			A	
473.59 *22*	(11/2)		C	J^{π}: postulated by 2013Rz01 (based probably on band-like cascade).
487.04? *22*			A	
491.12 *8*			A	
513.81 *8*	($^-$)		A	J^{π}: M1+E2 γ to 186, (−).
544.16 *8*			A	
547.49[‡] *12*	(13/2$^-$)		C	J^{π}: E2, 308.7γ to (9/2$^-$), 239 level.
564.36 *7*			A	
572.89[@] *13*	(11/2)		C	J^{π}: ΔJ=1, D 293.7γ to (9/2$^-$), 279 level.
587.00 *8*			A	
595.72 *9*			A	
628.33 *11*			A	
642.31 *14*	($^-$)		A	J^{π}: M1+E2 γ to 292, (−).
655.64 *18*			A	
670.19[#] *22*	(13/2$^-$)[b]		C	
690.61[&] *25*	(17/2$^+$)		C	J^{π}: E2, 239.9γ to (13/2$^+$), 451 level.
705.70 *15*			A	
712.0?			D	
716.32 *10*			A	
719.80 *8*			A	
738.21 *14*			A	
744.44 *9*			A	
773.61 *15*			A	
782.2 *4*	(15/2)[b]		C	J^{π}: postulated by 2013Rz01 (based probably on band-like cascade).
787.11 *10*			A	
801.70 *10*			A	

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Adopted Levels, Gammas (continued)

^{147}Ba Levels (continued)

E(level)[†]	J$^\pi$	XREF	Comments
842.89[@] *17*	(15/2)[b]	C	
921.26 *11*		A	
930.51 *21*		A	
971.69[‡] *16*	(17/2$^-$)	C	J$^\pi$: E2, 424.2γ to (13/2$^-$), 547 level.
1015.95 *8*		A	
1045.60 *10*		A	
1067.2[&] *3*	(21/2$^+$)	C	J$^\pi$: E2, 376.6γ to (17/2$^+$), 691 level.
1078.9 *3*		A	
1090.3 *3*		A	
1133.2[#] *4*	(17/2$^-$)[b]	C	
1140.3?		D	
1208.96 *18*		A	
1226.5[@] *3*	(19/2)[b]	C	
1239.53 *17*		A	
1262.00 *17*		A	
1326.21 *21*		A	
1476.5[‡] *3*	(21/2$^-$)[b]	C	
1557.8[&] *4*	(25/2$^+$)	C	J$^\pi$: E2 γ to (21/2$^+$), 1067.
1694.9[@] *4*	(23/2)[b]	C	
1707.2 *3*		A	
2008.2[‡] *4*	(25/2$^-$)[b]	C	
2141.6[&] *5*	(29/2$^+$)[b]	C	
2192.2[@] *5*	(27/2)[b]	C	
2300.2 *8*		A	
2365.2 *10*		A	
2496.3[‡] *5*	(29/2$^-$)[b]	C	
2794.4[&] *6*	(33/2$^+$)[b]	C	

[†] From least-squares fit to Eγ data.
[‡] Band(A): K^π=5/2$^-$ band based on 85, (5/2$^-$), ν5/2$^-$[523] configuration. In analogy with g.s. band in ^{145}Ba (based on alignment of 2.8 $\hbar$ and $\hbar\omega \approx$ 270 keV). Same configuration also observed in N=91 isotones of Sm, Gd, Dy, and Er.
[#] Band(B): Band based on 279, (9/2$^-$).
[@] Band(C): Octupole vibration band. Based on 573, (11/2), 3$^-$ octupole vibration coupled to low lying (5/2$^-$) (either g.s. or 85 level).
[&] Band(D): K^π=3/2$^+$ band based on 360, (9/2$^+$), ν3/2$^+$[651] configuration. In analogy with yrast bands in ^{145}Ba and ^{149}Ce.
[a] Band(E): K^π=(3/2$^-$) band based on 46 level. Similar g.s. band in ^{149}Ce.
[b] Based on assignment to fast ΔJ=2, E2 band.

γ(^{147}Ba)

E$_i$(level)	J$^\pi_i$	E$_\gamma$[‡]	I$_\gamma$[‡]	E$_f$	J$^\pi_f$	Mult.	α[†]	Comments
46.22	(3/2$^-$,5/2$^-$)	46.2 *1*	100	0.0	(5/2$^-$)	M1(+E2)	9.21	B(M1)(W.u.)=0.043 *7* α(K)=7.86 *12*; α(L)=1.071 *17*; α(M)=0.221 *4* α(N)=0.0477 *8*; α(O)=0.00727 *12*; α(P)=0.000521 *8* Mult.: α(K)exp and RUL (2005Sy01, β^- decay).
74.9?		28.9[a]		46.22	(3/2$^-$,5/2$^-$)			

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Adopted Levels, Gammas (continued)

γ(^{147}Ba) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.	α[†]	Comments
74.9?		75.1[a]		0.0	(5/2⁻)			
85.39	(5/2⁻)	39.3 *1*	3.7 *4*	46.22	(3/2⁻,5/2⁻)	M1(+E2)	14.63	B(M1)(W.u.)=0.012 *4* α(K)=12.46 *20*; α(L)=1.73 *3*; α(M)=0.356 *6* α(N)=0.0768 *13*; α(O)=0.01170 *19*; α(P)=0.000839 *14* Mult.: RUL (excludes ΔJ ≥ 2) and Δπ=no (excludes E1) (2005Sy01, β⁻ decay); very small E2 admixture is possible.
		85.4 *1*	100 *5*	0.0	(5/2⁻)	M1(+E2)	1.550	B(M1)(W.u.)=0.031 *9* α(K)=1.326 *19*; α(L)=0.179 *3*; α(M)=0.0369 *6* α(N)=0.00795 *12*; α(O)=0.001214 *18*; α(P)=8.75×10^{-5} *13* Mult.: K/L ratio (1981ScZM, β⁻ decay); very small E2 admixture is possible (2005Sy01, β⁻ decay).
109.81	(7/2⁻)	24.4 *1*	0.9 *5*	85.39	(5/2⁻)			
		35.1[a]	4 *2*	74.9?				
		63.6[a]	4 *2*	46.22	(3/2⁻,5/2⁻)			
		109.8 *1*	100 *2*	0.0	(5/2⁻)	M1+E2	1.07 *32*	α(K)exp=1.1 *2* (2013Rz01) α(K)=0.78 *14*; α(L)=0.23 *15*; α(M)=0.049 *32* α(N)=0.0103 *65*; α(O)=0.00142 *83*; α(P)=4.27×10^{-5} *6* Mult.: M1+E2 from K/L ratio in β⁻ decay (1987ScZG) and α(K)exp in ^{248}Cm SF decay (2013Rz01).
185.80	(7/2⁻)	76.0 *1*	10 *2*	109.81	(7/2⁻)			
		100.4 *1*	33 *5*	85.39	(5/2⁻)			
		139.6 *1*	8.5 *19*	46.22	(3/2⁻,5/2⁻)			
		185.7 *2*	100 *3*	0.0	(5/2⁻)	M1,E2	0.198 *24*	α(K)=0.160 *11*; α(L)=0.030 *11*; α(M)=0.0064 *24* α(N)=0.00136 *48*; α(O)=1.96×10^{-4} *60*; α(P)=9.4×10^{-6} *6* Mult.: K/L ratio (1981ScZM, β⁻ decay).
198.9?		198.9[a]	100	0.0	(5/2⁻)			
238.79	(9/2⁻)	53.0[#] *3*	31[#] *12*	185.80	(7/2⁻)			
		129.0 *1*	87 *23*	109.81	(7/2⁻)	D[&]		
		153.4 *1*	67 *10*	85.39	(5/2⁻)	E2[&]	0.428	α(K)=0.315 *5*; α(L)=0.0892 *13*; α(M)=0.0192 *3* α(N)=0.00402 *6*; α(O)=0.000549 *8*; α(P)=1.584×10^{-5} *23*
		238.8 *1*	100 *15*	0.0	(5/2⁻)	(E2)	0.0949	α(K)=0.0755 *11*; α(L)=0.01542 *22*; α(M)=0.00328 *5* α(N)=0.000691 *10*; α(O)=9.77×10^{-5} *14*; α(P)=4.13×10^{-6} *6* Mult.: fast ΔJ=2 transition in ^{248}Cm SF decay dataset.
279.19	(9/2⁻)	169.4 *1*	100	109.81	(7/2⁻)	M1+E2[&]	0.26 *4*	α(K)=0.211 *19*; α(L)=0.043 *17*; α(M)=0.0090 *38* α(N)=0.00191 *77*; α(O)=2.71×10^{-4} *97*;

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Adopted Levels, Gammas (continued)

$\gamma(^{147}Ba)$ (continued)

E_i(level)	J^π_i	E_γ[‡]	I_γ[‡]	E_f	J^π_f	Mult.	α[†]	Comments
								α(P)=1.22×10^{-5} *5* Mult.: D+Q transition, adopted as M1+E2 in ^{248}Cm SF decay.
292.10	($^-$)	93.0[a]	12 *6*	198.9?				
		245.9 *1*	100 *7*	46.22	(3/2$^-$,5/2$^-$)	M1+E2	0.0841 *24*	α(K)=0.0695 *13*; α(L)=0.0115 *23*; α(M)=0.0024 *6* α(N)=0.00052 *11*; α(O)=7.5×10^{-5} *13*; α(P)=4.2×10^{-6} *5* Mult.: K/L ratio (1981ScZM, β^- decay).
		292.0[a]	20 *10*	0.0	(5/2$^-$)			
319.4?		319.3[a]	100	0.0	(5/2$^-$)			
327.40		35.2 *2*	2.4 *8*	292.10	($^-$)			
		140.5[a]	61 *33*	185.80	(7/2$^-$)			
		241.9 *2*	24.1 *24*	85.39	(5/2$^-$)			
		281.2 *1*	38 *5*	46.22	(3/2$^-$,5/2$^-$)			
		327.4 *2*	100 *20*	0.0	(5/2$^-$)			
360.01	(9/2$^+$)	80.8[#] *2*	5[#] *2*	279.19	(9/2$^-$)	E1	0.410 *7*	α(K)=0.349 *6*; α(L)=0.0485 *8*; α(M)=0.00995 *16* α(N)=0.00211 *4*; α(O)=0.000306 *5*; α(P)=1.76×10^{-5} *3* Mult.: from intensity balance considerations of 90.7 –> 80.8 cascade, where 90.7γ is E2 in ^{248}Cm SF decay.
		121.4[#] *2*	12[#] *20*	238.79	(9/2$^-$)	D[&]		Mult.: unstretched ΔJ=0, D transition.
		174.1 *2*	66 *12*	185.80	(7/2$^-$)	D[&]		
		250.1 *3*	100 *26*	109.81	(7/2$^-$)	D[&]		
		360[a]	<0.7	0.0	(5/2$^-$)			E_γ: transition is definitely not observed in 2013Rz01 (^{248}Cm SF decay), only an upper limit of 0.7% of I(251γ) is given (adopted here).
365.62	($^-$)	179.9 *2*	8.3 *3*	185.80	(7/2$^-$)			
		255.8 *1*	5.1 *14*	109.81	(7/2$^-$)			
		280.2 *2*	18.6 *23*	85.39	(5/2$^-$)	M1,E2	0.0571 *12*	α(K)=0.0476 *23*; α(L)=0.0075 *10*; α(M)=0.00157 *23* α(N)=0.00034 *5*; α(O)=5.0×10^{-5} *5*; α(P)=2.9×10^{-6} *4* Mult.: K/L ratios (1981ScZM and 1987ScZG, β^- decay).
		319.4 *1*	74 *4*	46.22	(3/2$^-$,5/2$^-$)			
		365.6[a]	100 *11*	0.0	(5/2$^-$)			
397.48	($^-$)	312.2 *1*	48 *5*	85.39	(5/2$^-$)			
		351.2 *1*	100 *5*	46.22	(3/2$^-$,5/2$^-$)	M1+E2	0.0299 *24*	α(K)=0.0252 *25*; α(L)=0.00373 *14*; α(M)=0.00078 *4* α(N)=0.000166 *7*; α(O)=2.48×10^{-5} *5*; α(P)=1.56×10^{-6} *25* Mult.: K/L ratios (1981ScZM and 1987ScZG, β^- decay).
		397.4 *2*	5.3 *14*	0.0	(5/2$^-$)			
426.10		316.3 *2*	80 *26*	109.81	(7/2$^-$)			
		340.7 *1*	100 *4*	85.39	(5/2$^-$)			
		426.1 *1*	90 *15*	0.0	(5/2$^-$)			
427.4?		241.6 *3*	100	185.80	(7/2$^-$)			

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Adopted Levels, Gammas (continued)

$\gamma(^{147}Ba)$ (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.	α[†]	Comments
450.71	(13/2+)	90.7[#] *2*	100[#]	360.01	(9/2+)	E2[&]	2.73 *5*	α(K)=1.63 *3*; α(L)=0.868 *15*; α(M)=0.190 *4* α(N)=0.0394 *7*; α(O)=0.00519 *9*; α(P)=7.35×10^{-5} *12* Mult.: based on α(K)exp and $\gamma\gamma(\theta)$ in ^{248}Cm SF decay. α(K)exp=2.4 *4* (2013Rz01).
451.32		123.9 *1*	10 *2*	327.40				
		265.6 *2*	33 *7*	185.80	(7/2−)			
		341.5 *2*	24 *5*	109.81	(7/2−)			
		365.9 *1*	100 *7*	85.39	(5/2−)			
462.08		134.6 *1*	7 *2*	327.40				
		352.3 *1*	10 *3*	109.81	(7/2−)			
		462.1 *1*	100 *14*	0.0	(5/2−)			
473.59	(11/2)	194.4[#] *2*	100[#]	279.19	(9/2−)			
487.04?		377.5[a] *3*	80 *40*	109.81	(7/2−)			
		486.8[a] *3*	100 *50*	0.0	(5/2−)			
491.12		305.4 *2*	93 *5*	185.80	(7/2−)			
		381.3 *2*	26 *6*	109.81	(7/2−)			
		405.8 *1*	62 *6*	85.39	(5/2−)			
		444.8 *1*	100 *22*	46.22	(3/2−,5/2−)			
513.81	(−)	116.4 *1*	15 *3*	397.48	(−)			
		186.4 *1*	100 *16*	327.40				
		221.7 *1*	85 *14*	292.10	(−)			
		327.8 *2*	33 *9*	185.80	(7/2−)	M1+E2	0.0363 *23*	α(K)=0.031 *3*; α(L)=0.0046 *3*; α(M)=0.00096 *8* α(N)=0.000205 *14*; α(O)=3.05×10^{-5} *12*; α(P)=1.9×10^{-6} *3* Mult.: K/L ratios (1981ScZM and 1987ScZG, β^- decay).
544.16		184.1 *2*	8.1 *23*	360.01	(9/2+)			
		216.8 *1*	28.7 *23*	327.40				
		265.0 *1*	100 *20*	279.19	(9/2−)			
		434.3 *1*	93 *26*	109.81	(7/2−)			
547.49	(13/2−)	308.7[#] *1*	100[#]	238.79	(9/2−)	E2[&]	0.0413	α(K)=0.0337 *5*; α(L)=0.00603 *9*; α(M)=0.001271 *18* α(N)=0.000269 *4*; α(O)=3.88×10^{-5} *6*; α(P)=1.92×10^{-6} *3*
564.36		204.4 *2*	13 *3*	360.01	(9/2+)			
		325.6 *3*	100 *10*	238.79	(9/2−)			
		454.6 *2*	24 *5*	109.81	(7/2−)			
		479.0 *1*	88 *9*	85.39	(5/2−)			
		564.3 *1*	69 *5*	0.0	(5/2−)			
572.89	(11/2)	293.7[#] *1*	100[#]	279.19	(9/2−)	D[&]		
587.00		294.7 *3*	6.7 *20*	292.10	(−)			
		501.5 *5*	23 *4*	85.39	(5/2−)			
		540.8 *1*	100 *14*	46.22	(3/2−,5/2−)			
		587.0 *1*	67 *14*	0.0	(5/2−)			
595.72		276.1[a]	29 *15*	319.4?				
		303.6 *2*	10 *3*	292.10	(−)			
		409.5[a]	29 *15*	185.80	(7/2−)			
		549.2 *2*	53 *13*	46.22	(3/2−,5/2−)			
		595.8 *1*	100 *16*	0.0	(5/2−)			
628.33		336.3 *3*	4 *3*	292.10	(−)			

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Adopted Levels, Gammas (continued)

$\gamma(^{147}Ba)$ (continued)

E_i(level)	J^π_i	E_γ[‡]	I_γ[‡]	E_f	J^π_f	Mult.	α[†]	Comments
628.33		582.1 *1*	100 *16*	46.22	$(3/2^-,5/2^-)$			
642.31	$(^-)$	180.1 *2*	99 *10*	462.08				
		350.3 *2*	100 *11*	292.10	$(^-)$	M1+E2	0.0301 *24*	α(K)=0.0254 *25*; α(L)=0.00376 *15*; α(M)=0.00078 *4* α(N)=0.000167 *7*; α(O)=2.50×10^{-5} *5*; α(P)=1.57×10^{-6} *25* Mult.: K/L ratios (1981ScZM and 1987ScZG, β^- decay).
		557.0 *3*	73 *7*	85.39	$(5/2^-)$			
655.64		469.8 *3*	100 *9*	185.80	$(7/2^-)$			
		545.8 *3*	65 *6*	109.81	$(7/2^-)$			
		570.3 *3*	74 *7*	85.39	$(5/2^-)$			
670.19	$(13/2^-)$	391.0 *2*	100	279.19	$(9/2^-)$			
690.61	$(17/2^+)$	239.9[#] *1*	100[#]	450.71	$(13/2^+)$	E2[&]	0.0935	α(K)=0.0744 *11*; α(L)=0.01515 *22*; α(M)=0.00322 *5* α(N)=0.000679 *10*; α(O)=9.60×10^{-5} *14*; α(P)=4.07×10^{-6} *6*
705.70		519.9 *2*	100 *21*	185.80	$(7/2^-)$			
		620.3 *2*	64 *13*	85.39	$(5/2^-)$			
712.0?		352.0[@a]	100[@]	360.01	$(9/2^+)$			
716.32		424.3 *2*	17 *4*	292.10	$(^-)$			
		630.9 *1*	100 *7*	85.39	$(5/2^-)$			
719.80		609.9 *2*	29 *7*	109.81	$(7/2^-)$			
		634.4 *1*	100 *16*	85.39	$(5/2^-)$			
		673.6 *1*	60 *11*	46.22	$(3/2^-,5/2^-)$			
738.21		378.2 *1*	100	360.01	$(9/2^+)$			
744.44		293.1 *1*	15 *7*	451.32				
		452.4 *1*	52 *4*	292.10	$(^-)$			
		698.1 *2*	100 *10*	46.22	$(3/2^-,5/2^-)$			
773.61		663.8 *2*	56 *12*	109.81	$(7/2^-)$			
		773.6 *2*	100 *21*	0.0	$(5/2^-)$			
782.2	(15/2)	308.6[#] *3*	100[#]	473.59	(11/2)			
787.11		459.7 *1*	85 *14*	327.40				
		601.3 *5*	91 *32*	185.80	$(7/2^-)$			
		701.8 *5*	42 *6*	85.39	$(5/2^-)$			
		740.9 *2*	100 *8*	46.22	$(3/2^-,5/2^-)$			
801.70		691.9 *4*	27 *6*	109.81	$(7/2^-)$			
		801.7 *1*	100 *22*	0.0	$(5/2^-)$			
842.89	(15/2)	270.0[#] *1*	100[#]	572.89	(11/2)			
921.26		593.9 *1*	85 *9*	327.40				
		629.0 *2*	100 *32*	292.10	$(^-)$			
930.51		820.7 *2*	100	109.81	$(7/2^-)$			
971.69	$(17/2^-)$	424.2[#] *1*	100[#]	547.49	$(13/2^-)$	E2[&]	0.01570	α(K)=0.01309 *19*; α(L)=0.00207 *3*; α(M)=0.000433 *6* α(N)=9.23×10^{-5} *13*; α(O)=1.356×10^{-5} *19*; α(P)=7.75×10^{-7} *11*
1015.95		723.9 *1*	33 *6*	292.10	$(^-)$			
		930.5 *1*	88 *27*	85.39	$(5/2^-)$			
		1015.9 *3*	100 *19*	0.0	$(5/2^-)$			
1045.60		718.2 *1*	100 *20*	327.40				
		1045.6 *2*	92 *22*	0.0	$(5/2^-)$			
1067.2	$(21/2^+)$	376.6[#] *1*	100[#]	690.61	$(17/2^+)$	E2[&]	0.0223	α(K)=0.0185 *3*; α(L)=0.00305 *5*; α(M)=0.000640 *9* α(N)=0.0001361 *19*; α(O)=1.99×10^{-5} *3*;

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

$\gamma(^{147}Ba)$ (continued)

E_i(level)	J_i^π	E_γ [‡]	I_γ [‡]	E_f	J_f^π	Mult.	α [†]	Comments
								α(P)=1.080×10^{-6} *16* Mult.: DCO, polarization (1996Jo14, ^{248}Cm SF decay).
1078.9		786.8 *3*	100	292.10	($^-$)			
1090.3		798.2 *3*	100	292.10	($^-$)			
1133.2	(17/2$^-$)	463.0[#] *3*	100[#]	670.19	(13/2$^-$)			
1140.3?		428[@a]	100[@]	712.0?				
1208.96		916.7 *4*	79 *14*	292.10	($^-$)			
		1209.0 *2*	100 *28*	0.0	(5/2$^-$)			
1226.5	(19/2)	383.6[#] *2*	100[#]	842.89	(15/2)			
1239.53		841.8 *3*	55 *5*	397.48	($^-$)			
		947.5 *5*	27 *5*	292.10	($^-$)			
		1193.4 *2*	100 *15*	46.22	(3/2$^-$,5/2$^-$)			
1262.00		770.8 *4*	33 *6*	491.12				
		969.6 *4*	39 *9*	292.10	($^-$)			
		1176.7 *2*	100 *19*	85.39	(5/2$^-$)			
1326.21		1140.4 *2*	100	185.80	(7/2$^-$)			
1476.5	(21/2$^-$)	504.8 *2*	100	971.69	(17/2$^-$)			
1557.8	(25/2$^+$)	490.6[#] *2*	100[#]	1067.2	(21/2$^+$)	E2	0.01039	α(K)=0.00872 *13*; α(L)=0.001321 *19*; α(M)=0.000275 *4* α(N)=5.88×10^{-5} *9*; α(O)=8.70×10^{-6} *13*; α(P)=5.24×10^{-7} *8* Mult.: DCO, polarization (1996Jo14, ^{248}Cm SF decay).
1694.9	(23/2)	468.4[#] *2*	100[#]	1226.5	(19/2)			
1707.2		1415.1 *3*	100	292.10	($^-$)			
2008.2	(25/2$^-$)	531.7[#] *3*	100[#]	1476.5	(21/2$^-$)			
2141.6	(29/2$^+$)	583.8[#] *3*	100[#]	1557.8	(25/2$^+$)			
2192.2	(27/2)	497.3[#] *3*	100[#]	1694.9	(23/2)			
2300.2		2114.4 *8*	100	185.80	(7/2$^-$)			
2365.2		2279.8 *10*	100	85.39	(5/2$^-$)			
2496.3	(29/2$^-$)	488.1[#] *3*	100[#]	2008.2	(25/2$^-$)			
2794.4	(33/2$^+$)	652.8[#] *3*	100[#]	2141.6	(29/2$^+$)			

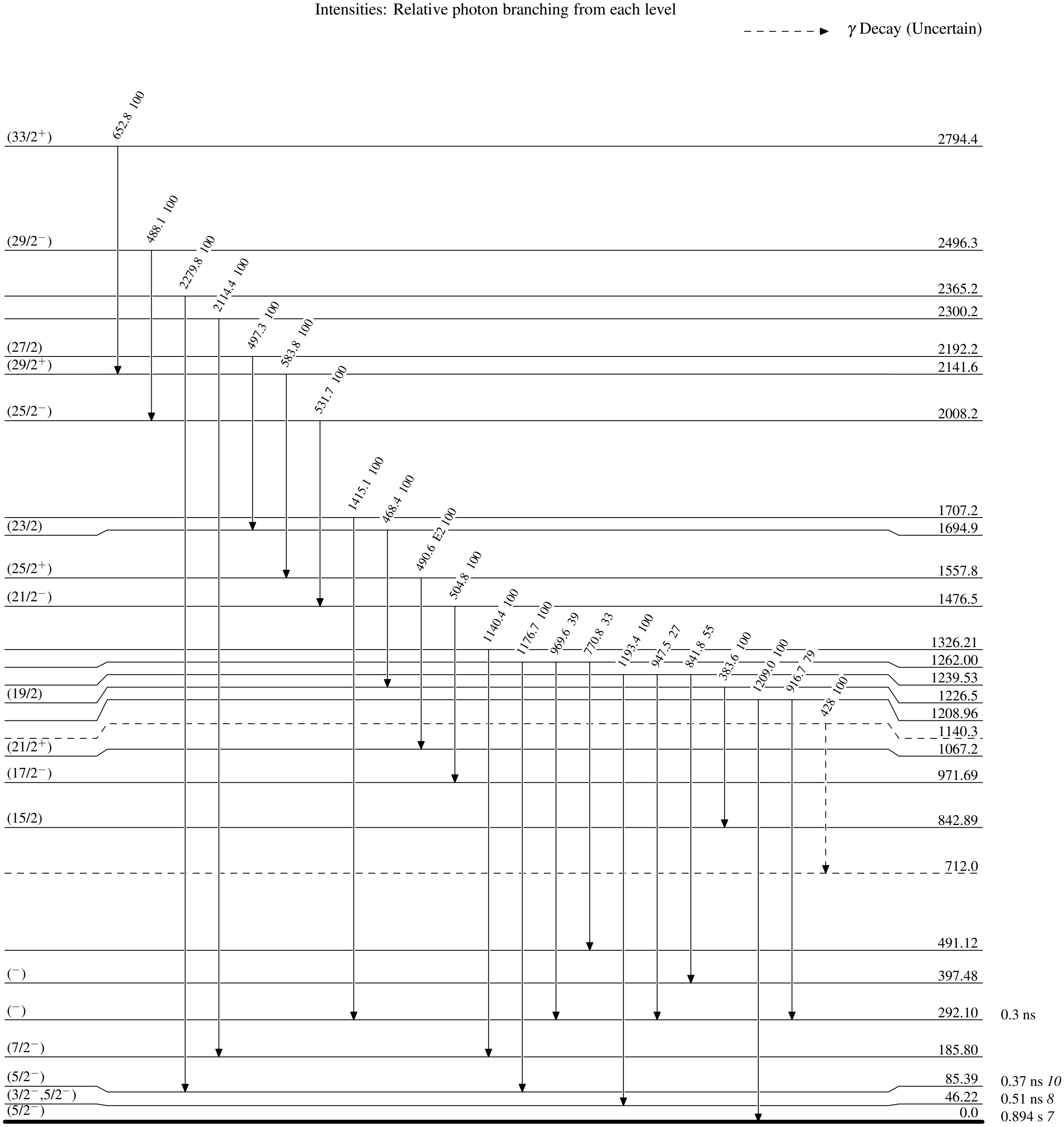
[†] Additional information 1.
[‡] From β^- decay, except where noted.
[#] From ^{248}Cm SF decay.
[@] From ^{252}Cf SF decay.
[&] From angular correlations in ^{248}Cm SF decay dataset.
[a] Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

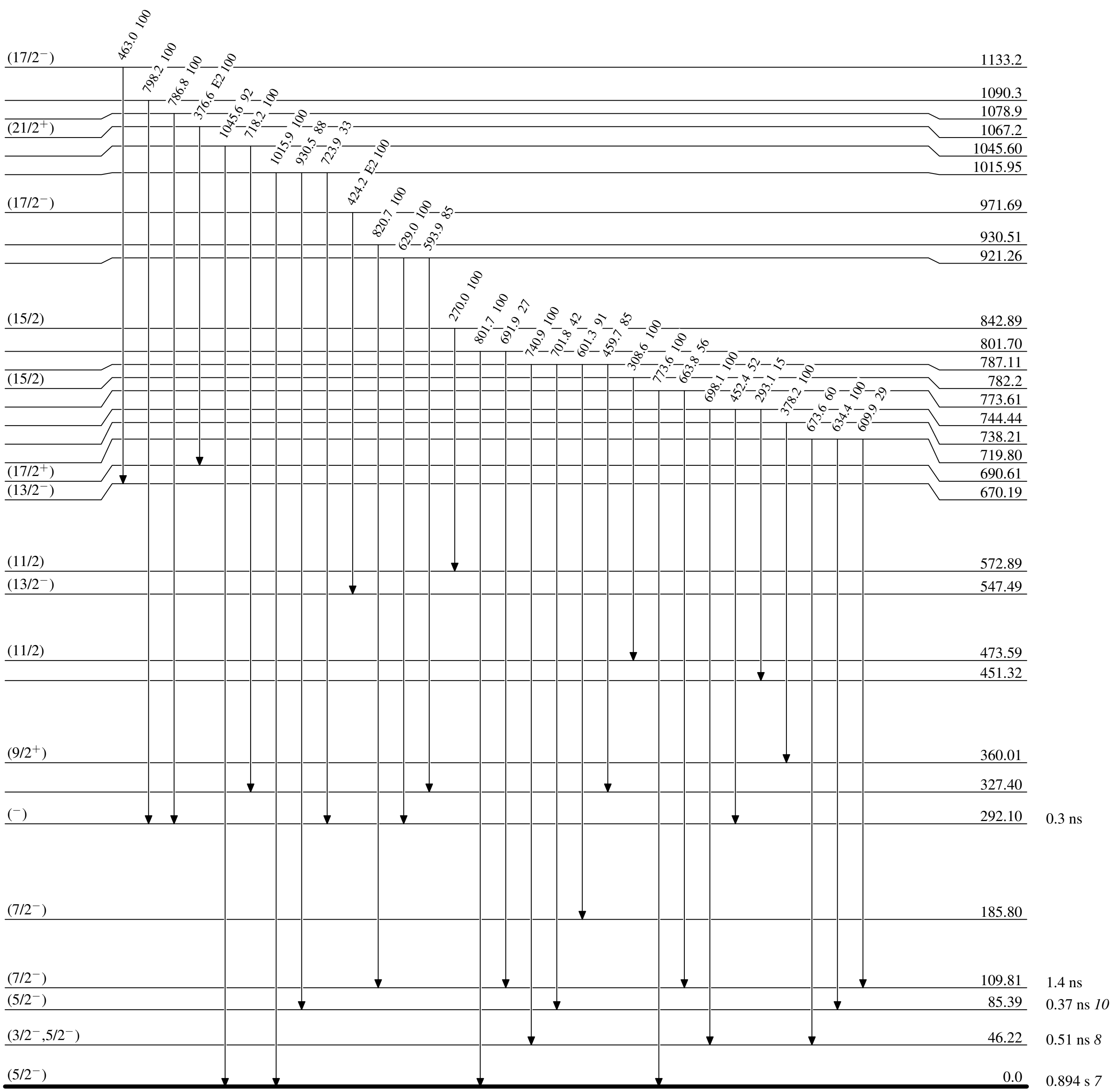


$^{147}_{56}Ba_{91}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

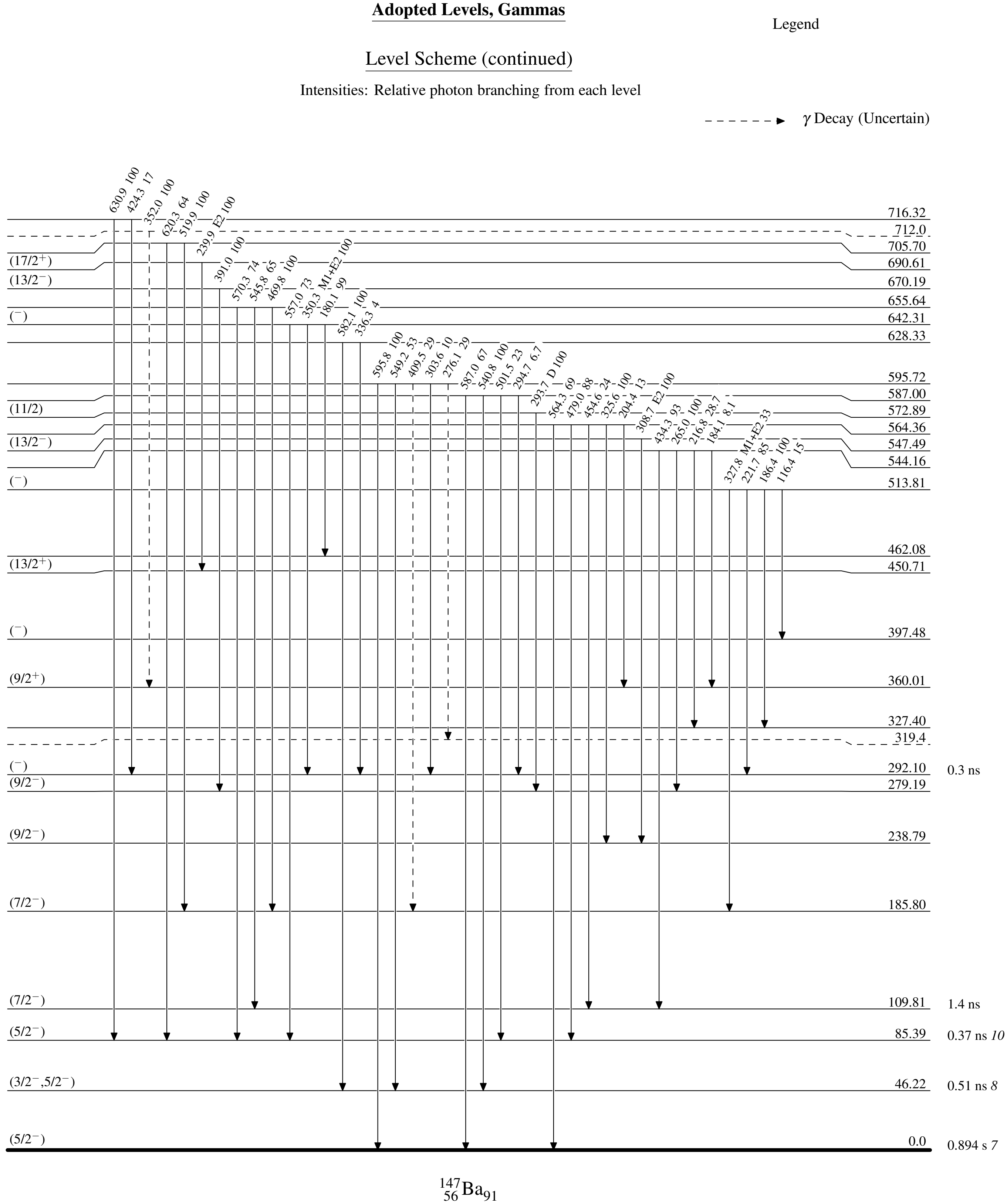


$^{147}_{56}Ba_{91}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

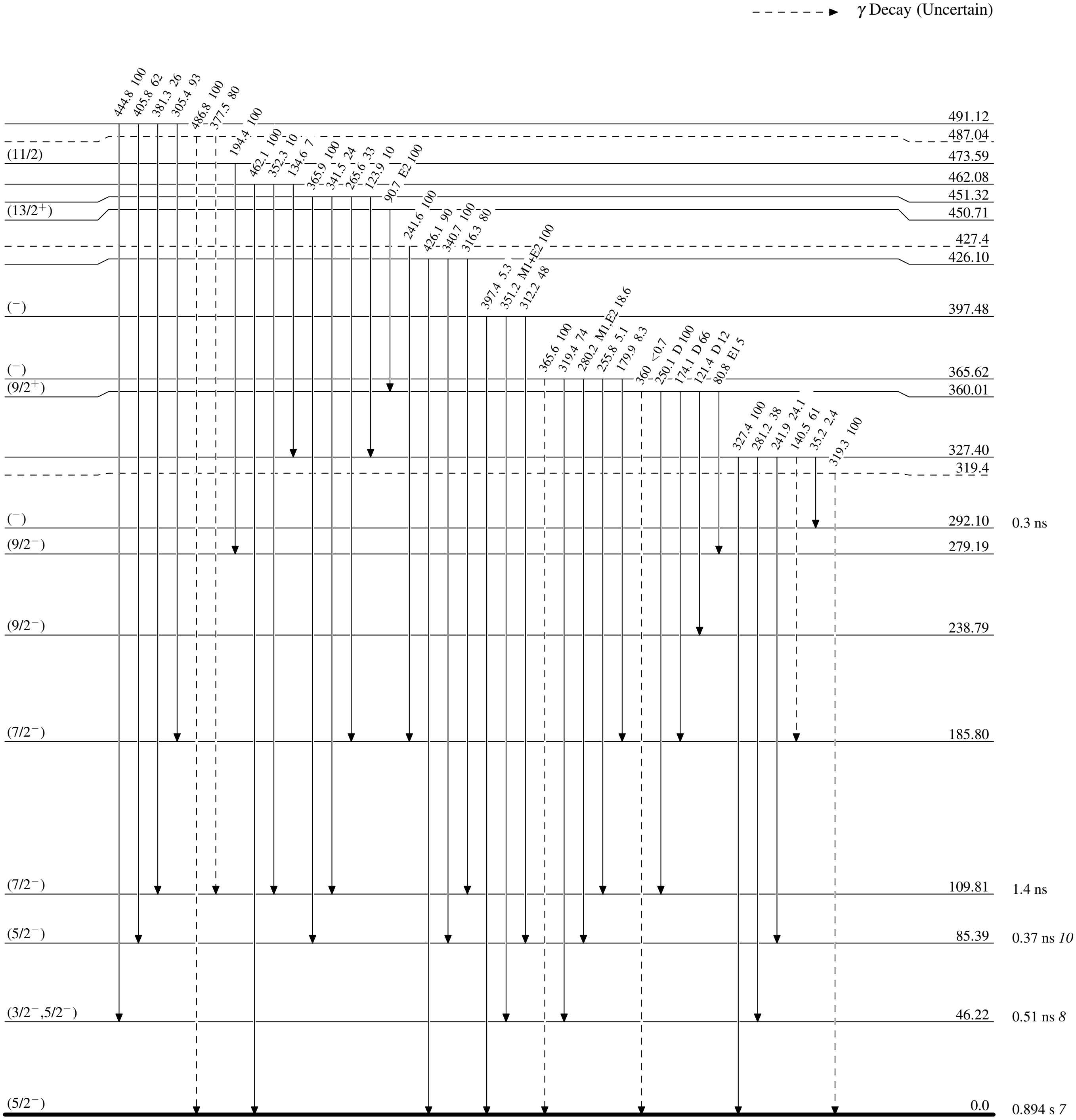


Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level



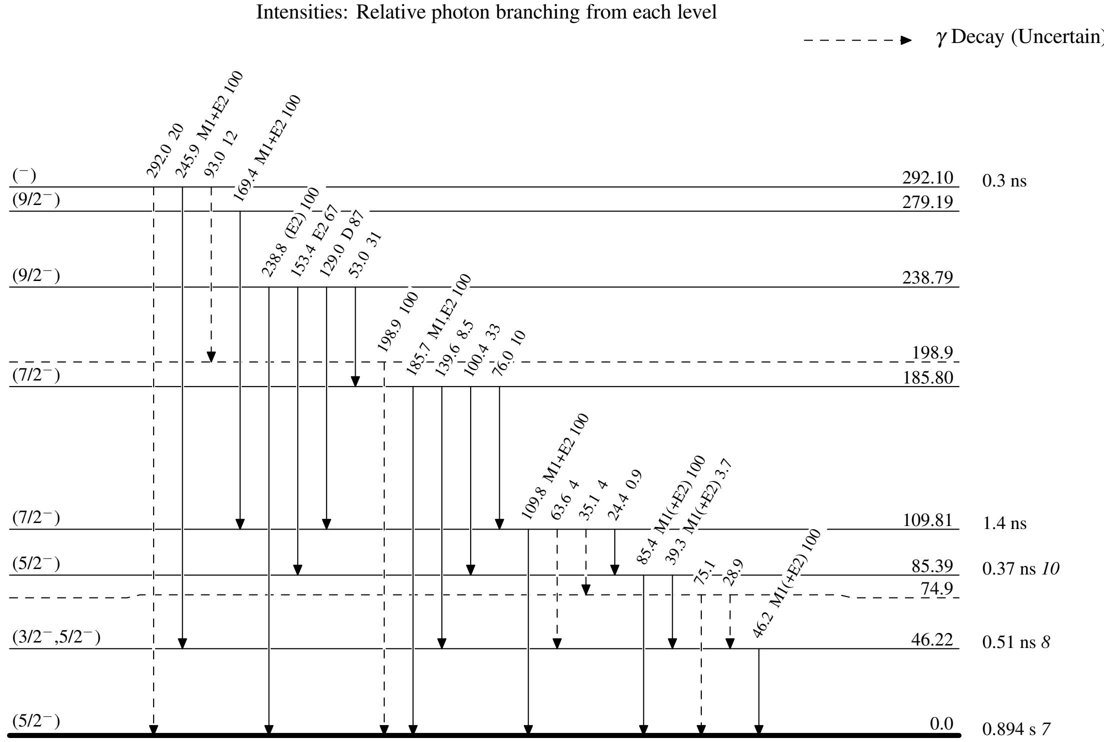
$^{147}_{56}Ba_{91}$

Adopted Levels, Gammas

Legend

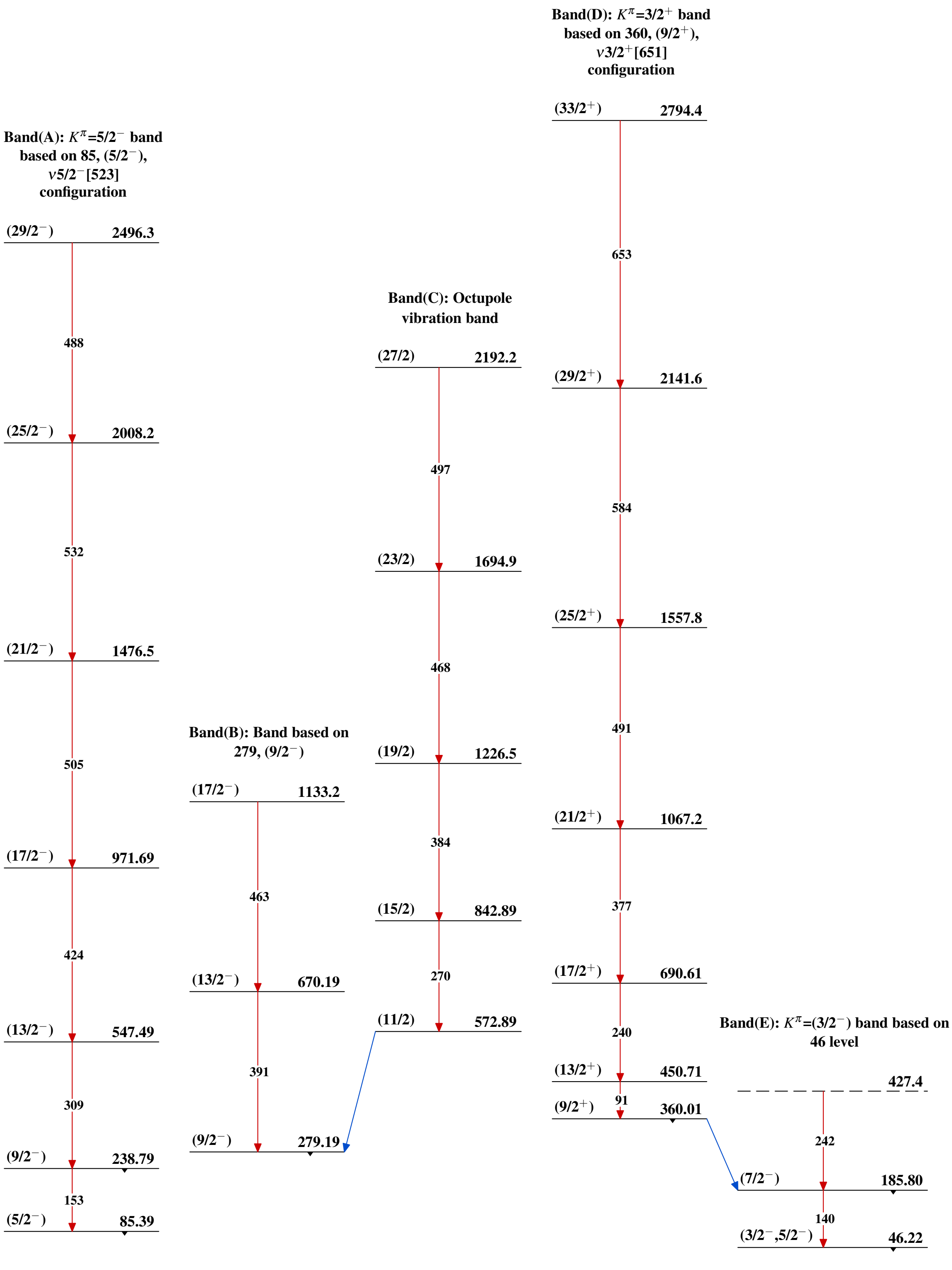
Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{147}_{56}Ba_{91}$

Adopted Levels, Gammas



$^{147}_{56}Ba_{91}$