Adopted Levels, Gammas

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. A. Mccutchan	NDS 152, 331 (2018)	1-Apr-2018

Q(β^-)=−90.5 *19*; S(n)=8087 *4*; S(p)=9939.0 *21*; Q(α)=−3666 *3* 2017Wa10
S(2n)=14445.97 *1*; S(2p)=18473.4 *27*; Q(2β^-)=2457.8 *3* (2017Wa10).
α: Additional information 1.

^{136}Xe Levels

Cross Reference (XREF) Flags

A	^{136}I β^- decay (83.4 s)	F	^{248}Cm SF decay	K	^{208}Pb(^{136}Xe,^{136}Xe′γ)
B	^{136}I β^- decay (46.6 s)	G	^{136}Xe(γ,γ')	L	^{235}U(n,F),^{239}Pu(n,F)
C	^{136}I β^- decay (83.4 s+46.6 s)	H	^{136}Xe(p,p′)	M	^{238}U(^{12}C,Fγ),^{208}Pb(^{18}O,Fγ)
D	^{137}I β^-n decay	I	^{136}Xe(n,n′γ)		
E	^{252}Cf SF decay	J	Coulomb excitation		

T$_{1/2}$(2β^-,2ν)(0$^+$ to 0$^+$):
2006Ga44: >8.5×10^{21} y (90% confidence)
2004Ga49: ≥2.4×10^{21} y (90% confidence)
2002Be74: >1.0×10^{22} y (90% confidence)
2000Ga10: >8.1×10^{20} y (90% confidence)
1998Lu11: >3.6×10^{20} y (90% confidence)
1993Vu02: >2.1×10^{20} y (90% confidence)
1992Ar04: >9.3×10^{19} y (90% confidence)
1991Be47: ≥6.0×10^{19} y (90% confidence); ≥7.0×10^{19} y (68% confidence)
1990Ba22: >6.0×10^{19} y (90% confidence); >8.4×10^{19} y (68% confidence)

T$_{1/2}$(2β^-,0ν)(0$^+$ to 0$^+$):
(m(ν) ≠ 0):
2016Ga30: >1.07×10^{26} y (90% confidence)
2013Ga07: >1.9×10^{25} y (90% confidence)
2012Au03: >1.6×10^{25} y (90% confidence)
2012Ga32: >2.6×10^{24} y (90% confidence)
2006Ga44: ≥3.1×10^{23} y (90% confidence)
2002Be74: >1.2×10^{24} y (90% confidence); >4.9×10^{24} y (68% confidence)
1998Lu11: >4.4×10^{23} y (90% confidence)
1993Vu02: >3.4×10^{23} y (90% confidence); >6.4×10^{23} y (68% confidence)
1991Wo03: >2.5×10^{23} y (90% confidence); >4.9×10^{23} y (68% confidence)
1991Be47: ≥2.0×10^{22} y (90% confidence); ≥3.4×10^{22} y (68% confidence)
1990Ba22: ≥3.3×10^{21} y (68% confidence)
(right-handed-current mode):
1993Vu02: >2.6×10^{23} y (90% confidence); >4.9×10^{23} y (68% confidence)
1991Wo03: >1.7×10^{23} y (90% confidence); >3.2×10^{23} y (68% confidence)
1991Be47: ≥1.7×10^{22} y (90% confidence); ≥3.0×10^{22} y (68% confidence)
1990Ba22: >2.9×10^{21} y (68% confidence)

T$_{1/2}$(2β^-,0ν)(0$^+$ to 0$^+$):
(Majoron emission):
2014Al29: >1.2×10^{24} y (90% confidence)
2002Be74: >5.0×10^{23} y (90% confidence)
1998Lu11: >7.2×10^{21} y (90% confidence)
1993Vu02: >4.9×10^{21} y (90% confidence)

T$_{1/2}$(2β^-) Other measurements: 1991Wo06, 1991Be30, 1991Ar24, 1991Ar21, 1989Be12, 1989Ba83, 1989Ba22, 1987Iq01, 1987Ba41, 1986Ba33

T$_{1/2}$(2β^-)(0$^+$ to 2$^+$):
2002Be74: >9.4×10^{21} y (90% confidence)
1991Be47: ≥6.5×10^{21} y (90% confidence); ≥1.1×10^{22} y (68% confidence)
1990Ba22: >1.5×10^{21} y (68% confidence)

T$_{1/2}$(2β^-)(0$^+$ to excited 0$^+$):

2016Al05: >6.9×10^{23} y (90% confidence)

E(level)[†]	J$^{\pi}$	T$_{1/2}$[‡]	XREF	Comments
0.0[&]	0$^+$	2.165×10^{21} y *61*	ABCDEFGHIJKLM	%2β^-=100 T$_{1/2}$: from 2014Al03,2014To10 for 2$\nu2\beta$ decay mode. Uncertainty of 0.059×10^{21} y (systematic) and 0.016×10^{21} y (statistical) combined in quadrature. Others: 2.30×10^{21} y *12* (2012Ga32), 2.38×10^{21} y *14* (2012Ga17), 5.8×10^{21} y *+47−18* (2013Ga41), 2.11×10^{21} y *21* (2011Ac03) for 2$\nu2\beta$ decay mode. See table above for limits on 0$\nu2\beta$ decay mode. Limits on several rare decays are given in 2006Be42. No hyperfine splitting observed (1976Fu06,1934Jo01). Δ<r^2>(^{134}Xe−^{136}Xe)=−0.052 fm^2 *12*, Δ<r^2>(^{138}Xe−^{136}Xe)=0.254 fm^2 *20*, Δ<r^2>(^{137}Xe−^{136}Xe)=0.105 fm^2 *10* (2000Ga58).
1313.06[&] *7*	2$^+$	0.360 ps *14*	ABC EFGHIJKLM	μ=+1.54 *10* (2002Ja02) μ: from transient field technique (2002Ja02). Other: 2.4 *5* (1993Sp01, transient field technique). J$^{\pi}$: from Coulomb excitation and $\gamma\gamma(\theta)$ in ^{136}I decay (46.6 s). T$_{1/2}$: from DSAM in Coulomb excitation. Other: <0.15 ns from $\gamma\gamma$(t) in ^{136}I β^- decay (46.6 s). configuration=π1g7/2^{+2}.
1694.42[&] *7*	4$^+$	1.293 ns *17*	AB EF HIJKLM	μ=3.2 *6* (1985Be04,1988WoZW) μ: from TPAD. Other: +4.3 *17* from transient field technique (2002Ja02). configuration=π1g7/2^{+2}. J$^{\pi}$: E2 382γ to 2$^+$ and $\gamma\gamma(\theta)$ in ^{136}I decay (46.6 s).
1891.74[&] *7*	6$^+$	2.95 μs *17*	B EF HI KLM	%IT=100 T$_{1/2}$: weighted average of 2.9 μs *2* from ^{136}I β^- decay (46.6 s), 2.92 μs *17* from ^{252}Cf SF decay, and 3.10 μs *25* from ^{235}U(n,F),^{239}Pu(n,F). configuration=π1g7/2^{+2}. J$^{\pi}$: E2 197γ to 4$^+$ and $\gamma\gamma(\theta)$ in ^{136}I decay (46.6 s).
2125.72 *8*	3$^+$,4$^+$		ABC HI	XREF: H(2108). J$^{\pi}$: 431γ to 4$^+$, 813γ to 2$^+$, 319γ from 5, L(p,p′)=6,(5) for 2108 level is discrepant.
2261.56[a] *7*	6$^+$	≤50 ps	BC F HI M	J$^{\pi}$: ΔJ=0, M1+E2 369.8γ to 6$^+$.
2289.55 *9*	2$^+$		A GH	J$^{\pi}$: 1,2 from $\gamma(\theta)$ in ^{136}Xe(γ,γ'), 270γ from 4$^+$ and L(p,p′)=2.
2414.76 *12*	2$^+$		A GHI	J$^{\pi}$: 2 from $\gamma(\theta)$ in ^{136}Xe(γ,γ'), π from L(p,p′)=2.
2444.43 *9*	5	≤50 ps	BC hI	J$^{\pi}$: 3,5 from $\gamma\gamma(\theta)$ in ^{136}I β^- decay (46.6 s), 183γ to 6$^+$.
2465.05 *13*			BC hI	
2559.91 *9*	(4$^+$)		A C H	J$^{\pi}$: L(p,p′)=4, 1247γ to 2$^+$.
2582.4 *10*	0$^+$		A	J$^{\pi}$: E0 to g.s.
2608.47 *9*	4$^+$,5$^+$	≤50 ps	BC	J$^{\pi}$: M1 483γ to 3$^+$,4$^+$, 347γ to 6$^+$.
2634.19 *8*	1$^+$,2$^+$		A C H	J$^{\pi}$: L(p,p′)=2, 2634γ to 0$^+$.
2849.44 *11*	(1,2$^+$)		A h	J$^{\pi}$: 2849γ to 0$^+$.
2866.8[&] *3*	(8$^+$)		F M	J$^{\pi}$: 975.1γ to 6$^+$; band assignment.
2869.02 *11*	(2$^+$)		A Gh	J$^{\pi}$: 309γ to (4$^+$), 2869γ to 0$^+$.
2979.09 *22*	1$^+$,2$^+$		A H	J$^{\pi}$: L(p,p′)=2, 2979γ to 0$^+$.
3.16×10^3 *2*			H	
3211.92 *20*	(1,2$^+$)		A C	J$^{\pi}$: 3212γ to 0$^+$.
3229.2[a] *3*	8$^+$		F M	J$^{\pi}$: E2 967.6γ to 6$^+$, band assignment.
3275.26 *14*	3$^-$		A H	XREF: H(3263). J$^{\pi}$: L(p,p′)=3, 1962γ to 2$^+$, no observed β^- feeding from (1$^-$) parent.
3350.0 *10*	(1,2)[@]		GH	XREF: H(3310).

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Adopted Levels, Gammas (continued)

^{136}Xe Levels (continued)

E(level)[†]	Jπ	XREF		Comments
3483.8[a] *3*	10^+	F	M	Jπ: E2 254.6γ to 8^+; band assignment.
3626.1 *7*	1[@]	GH		XREF: H(3630).
3675 *1*	2[@]	G		
3738 *1*	1[@]	G		
3780 *20*	(4^-)[#]	H		
3830.0[b] *4*	(9^-)	F	M	Jπ: 601γ to 8^+, configuration assignment.
3830.08 *18*	$(6^+,5)$	B		Jπ: from log *ft*=7.4 from (6^-) parent, 2136γ to 4^+.
3872.84 *21*	$(6^+,5)$	BC		Jπ: from log *ft*=7.5 from (6^-) parent, 2178γ to 4^+.
3873.18 *14*	(3^-)[#]	A C	H	
4057.63 *15*	$(6^+,5)$	B	H	Jπ: from log *ft*=7.2 from (6^-) parent, 2363γ to 4^+. J^π=(3^-) from R matrix analysis in (p,p′) is discrepant.
4150 *20*	(2^-)[#]		H	
4269.36 *10*	$2^{(+)}$	A	H	Jπ: 1709 γ to (4^+), 4269γ to 0^+; J^π=(2^-) from R matrix analysis in (p,p′) is discrepant.
4320.1 *10*	0^+	A		Jπ: E0 to g.s.
4380 *20*	4^-[#]		H	
4380.4[c] *4*	(8^+)	F	M	Jπ: 1152γ to 8^+, configuration assignment.
4454.10 *17*	$1^{(-)},2^{(+)}$	A	H	Jπ: log *ft*=6.8 from (1^-) parent, 1178γ to 3^-, 4455γ to 0^+; J^π=2^- from R matrix analysis in (p,p′) is discrepant.
4474.06 *22*	1[@]	A	G	
4545.0 *3*	$1,2^{(+)}$	A	H	Jπ: 4544γ to 0^+. R matrix analysis in (p,p′) favors (1^-) assignment.
4711.2 *4*	1[@]	A	GH	Jπ: (2^-) from R matrix analysis in (p,p′) is discrepant.
4820 *20*	1^-[#]		H	
4857.0[b] *4*	(11^-)	F	M	Jπ: 1027γ to (9^-), band assignment.
4890 *1*	1[@]	G		
4929 *1*	1[@]	G		
4947.44 *24*		A C	H	Jπ: (2^-) proposed from R matrix analysis in (p,p′).
5017.01 *21*	$(1,2^+)$	A		Jπ: 5017γ to 0^+.
5100 *20*	(2^-)[#]		H	
5128 *1*	1[@]	G		
5141.0[b] *4*	(13^-)	F	M	Jπ: 284.0γ to (11^-); band assignment.
5150 *20*	(2^-)[#]		H	
5187 *1*	1[@]	G		
5217.8 *4*		A	H	Jπ: (3^-) is suggested from R matrix analysis in (p,p′).
5321.06? *24*	$(1^+,2^+)$	A	H	XREF: H(5310). Jπ: 5321γ to 0^+, 3195γ to $3^+,4^+$.
5322 *1*	1[@]	G		
5352 *1*	1	G	H	XREF: H(5360). Jπ: D 5352γ to 0^+.
5420 *20*			H	
5458 *1*	1,2[@]	G		
5481.7[c] *4*	(10^+)		M	Jπ: 1101γ to (8^+), band assignment.
5560 *20*	$(2^-,3^-)$[#]		H	
5608.2 *3*	1[@]	A C	G	
5639 *1*	1[@]	G		
5651 *1*	1[@]	G		
5670 *20*	(3^-)[#]		H	
5728 *1*	1[@]	G		
5760.3 *3*		A C		

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Adopted Levels, Gammas (continued)

^{136}Xe Levels (continued)

E(level)[†]	Jπ	XREF	Comments
5800.2 *3*	1[@]	A G	
5832.2? *6*	(2+,3,4+)	A h	Jπ: 3272γ to (4+), 4519γ to 2+.
5861.6? *4*	(4+,5,6+)	B h	Jπ: 3600γ to 6+, 3736γ to 3+,4+.
5870.8 *12*	1	A Gh	Jπ: D 5871γ to 0+.
5879.9[c] *5*	(11+)	M	Jπ: 398γ to (10+), band assignment.
5888 *1*	1[@]	G	
5914 *1*	1[@]	G	
5950.8[c] *4*	(12+)	F M	Jπ: 469γ to (10+), band assignment.
5968.5? *10*	(1,2+)	A h	Jπ: 5968γ to 0+.
6003 *1*	1,2[@]	G	
6013.0? *10*	(1,2+)	A h	Jπ: 6013γ to 0+.
6030 *1*	1,2[@]	G	
6052.6? *4*	(1,2+)	A	Jπ: 6053γ to 0+.
6091.3? *3*		BC	
6103.9 *3*	1−	A G	Jπ: 1 from γ(θ) in (γ,γ′), 2828.5γ to 3−.
6114.5 *7*	1[@]	A G	
6126.4 *5*	1[@]	A Gh	
6155.6[b] *6*	(14−)	M	Jπ: 1015γ to (13−), band assignment.
6169.9? *8*	(1,2+)	A h	Jπ: 6170γ to 0+.
6170.3[c] *5*	(13+)	F M	Jπ: 219.5γ to (12+), band assignment.
6186.38? *25*		C	
6200.1? *13*	(1,2+)	A	Jπ: 6200γ to 0+.
6227 *1*	1[@]	G	
6253.5 *8*	1[@]	A G	
6301 *1*	1[@]	GH	XREF: H(6290).
6310 *1*	1[@]	G	
6324 *1*	1[@]	G	
6354 *1*	1[@]	G	
6372 *1*	1[@]	G	
6409.0? *8*	(1,2+)	A	Jπ: 6409γ to 0+.
6412.3 *5*		C	
6430 *1*	1[@]	G	
6455 *1*	1[@]	G	
6493 *1*	1[@]	G	
6509 *1*	1[@]	G	
6527 *1*	1[@]	G	
6562 *1*	1[@]	G	
6577 *1*	1[@]	G	
6611.6[c] *6*	(14+)	M	Jπ: 441γ to (13+), band assignment.
6624.10 *19*		A	
6665 *1*	1[@]	G	
6684 *1*	1[@]	G	
6691 *1*	1[@]	G	
6704 *1*	1[@]	G	
6715 *1*	1[@]	G	
6734 *1*	1[@]	G	
6737.8 *6*	(14+)	M	Jπ: 567.5γ to (13+), 330γ from (15+).
6771 *1*	1[@]	G	

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Adopted Levels, Gammas (continued)

^{136}Xe Levels (continued)

E(level)[†]	J^π	XREF		Comments
6797 *1*	1[@]	G		
6808 *1*	1[@]	G		
6861 *1*	1[@]	G		
6869 *1*	1[@]	G		
6884 *1*	1[@]	G		
6942 *1*	1[@]	G		
6968 *1*	1[@]	G		
7013 *1*	1[@]	G		
7023 *1*	1[@]	G		
7053 *1*	1[@]	G		
7067.6[c] *6*	(15^+)		M	J^π: 898γ to (13^+), band assignment.
7071 *1*	1[@]	G		
7082 *1*	1[@]	G		
7094 *1*	1[@]	G		
7121 *1*	1[@]	G		
7134 *1*	1[@]	G		
7165 *1*	1[@]	G		
7193 *1*	1[@]	G		
7200 *1*	1[@]	G		
7212 *1*	1[@]	G		
7232 *1*	1[@]	G		
7245 *1*	1[@]	G		
7343 *1*	1[@]	G		
7370 *1*	1[@]	G		
7512.1[c] *7*	(16^+)		M	
7635.6 *8*			M	
7692 *1*	1[@]	G		
7727 *1*	1[@]	G		
7848.5 *8*			M	
7883 *1*	1[@]	G		
7908 *1*	1[@]	G		
7947.5[c] *8*	(17^+)		M	J^π: 435γ to (16^+), band assignment.
7990 *1*	1[@]	G		
8024 *1*	1[@]	G		
8051 *1*	1[@]	G		
8066 *1*	1[@]	G		
8093 *1*	1[@]	G		

[†] From a least-squares fit to Eγ, by evaluator, for levels connected by γ-ray transitions. All other level energies are from (p,p′).
[‡] From ^{136}I β^- decay (46.9 s), except where noted.
[#] From R matrix analysis of $\sigma(\theta)$ in (p,p′).
[@] From $\gamma(\theta)$ in (γ,γ').
[&] Band(A): Based on $\pi g^{+4}_{7/2}$ (1999Da13).
[a] Band(B): Based on $\pi g^{+3}_{7/2} d_{5/2}$ (1999Da13).

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Adopted Levels, Gammas (continued)

^{136}Xe Levels (continued)

[b] Band(C): Based on $\pi g^{+3}_{7/2}h_{11/2}$ (1999Da13). Configuration of $(\pi g_{7/2}\pi d^{+3}_{5/2}(\pi h_{11/2})^1$ is proposed by 2012As06.

[c] Band(D): Band with proposed configuration of $(\pi g_{7/2}\pi d^{+4}_{5/2}(\nu h_{11/2})_1(\nu f_{7/2})^{-1}$ (2012As06).

Adopted Levels, Gammas (continued)

γ(^{136}Xe)

See ^{136}I β$^-$ decay (83.4-s + 46.9-s) for unplaced gammas.

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	α	Comments
1313.06	2$^+$	1313.02 *10*	100	0.0	0$^+$	E2		α(K)=0.000792 *11*; α(L)=9.89×10^{-5} *14*; α(M)=2.00×10^{-5} *3*; α(N)=4.13×10^{-6} *6*; α(O)=5.16×10^{-7} *8* B(E2)(W.u.)=9.7 *4*
1694.42	4$^+$	381.359[#] *7*	100	1313.06	2$^+$	E2	0.0198	α(K)=0.01652 *24*; α(L)=0.00259 *4*; α(M)=0.000532 *8*; α(N)=0.0001085 *16* α(O)=1.274×10^{-5} *18* B(E2)(W.u.)=1.281 *17*
1891.74	6$^+$	197.316[#] *7*	100	1694.42	4$^+$	E2	0.1684	α(K)=0.1330 *19*; α(L)=0.0282 *4*; α(M)=0.00591 *9*; α(N)=0.001187 *17*; α(O)=0.0001304 *19* B(E2)(W.u.)=0.0132 *8*
2125.72	3$^+$,4$^+$	431.38 *12*	24.7[c] *7*	1694.42	4$^+$			
		812.63 *8*	100.0[c] *19*	1313.06	2$^+$			
2261.56	6$^+$	369.813[#] *23*	100[b] *15*	1891.74	6$^+$	M1+E2	0.0227 *11*	α(K)=0.0193 *13*; α(L)=0.00274 *14*; α(M)=0.00056 *4*; α(N)=0.000115 *6*; α(O)=1.39×10^{-5} *3* Mult.: from α(K)exp,α(L)exp in ^{136}I β$^-$ decay. Transition is ΔJ=0 from γγ(θ) in ^{238}U(^{12}C,Fγ),^{208}Pb(^{18}O,Fγ).
		567.0[b] *5*	6[b] *4*	1694.42	4$^+$	[E2]	0.00637	α(K)=0.00542 *8*; α(L)=0.000763 *11*; α(M)=0.0001557 *23*; α(N)=3.19×10^{-5} *5*; α(O)=3.86×10^{-6} *6* B(E2)(W.u.)>0.26
2289.55	2$^+$	976.5 *2*	25.6 *19*	1313.06	2$^+$			
		2289.6 *2*	100 *5*	0.0	0$^+$	(E2)		α(K)=0.000278 *4*; α(L)=3.36×10^{-5} *5*; α(M)=6.76×10^{-6} *10*; α(N)=1.400×10^{-6} *20*; α(O)=1.762×10^{-7} *25* Mult.: D,Q from γ(θ) in ^{136}Xe(γ,γ′). E2 from level scheme.
2414.76	2$^+$	1101.4[#] *3*	7.8 *10*	1313.06	2$^+$			I_γ: weighted average of 7.1 *11* (^{136}I β$^-$ decay (83.4 s)), 8.3 *10* (^{136}Xe(n,n′γ)).
		2414.6[#] *2*	100 *3*	0.0	0$^+$	E2		α(K)=0.000253 *4*; α(L)=3.05×10^{-5} *5*; α(M)=6.13×10^{-6} *9*; α(N)=1.271×10^{-6} *18*; α(O)=1.601×10^{-7} *23* Mult.: Q from γ(θ) in ^{136}Xe(γ,γ′), Δπ=no from level scheme.
2444.43	5	182.7[#] *2*	10.5 *24*	2261.56	6$^+$			I_γ: weighted average of 12.8 *16* (^{136}I β$^-$ decay (46.6 s)), 8.1 *16* (^{136}Xe(n,n′γ)).
		318.6[#] *2*	9.1 *7*	2125.72	3$^+$,4$^+$			I_γ: weighted average of 8.8 *7* (^{136}I β$^-$ decay (46.6 s)), 10.5 *16* (^{136}Xe(n,n′γ)).
		552.69[#] *14*	14.4 *10*	1891.74	6$^+$			I_γ: weighted average of 14.5 *10* (^{136}I β$^-$ decay (46.6 s)), 14.2 *16* (^{136}Xe(n,n′γ)).
		750.05[#] *7*	100[c] *4*	1694.42	4$^+$	D		Mult.: from γγ(θ) in ^{136}I β$^-$ decay (46.6 s).

$^{136}_{54}Xe_{82}$-7

Adopted Levels, Gammas (continued)

γ(^{136}Xe) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	α	Comments
2465.05		339.4[#] *2*	15.5 *11*	2125.72	3+,4+			I_γ: weighted average of 20 *4* (^{136}I β^- decay (46.6 s)), 15.2 *10* (^{136}Xe(n,n′γ)).
		770.75[#] *15*	100[c] *3*	1694.42	4+			
2559.91	(4+)	270.2 *3*	9.1 *24*	2289.55	2+			
		434.18 *11*	35 *3*	2125.72	3+,4+			
		865.5 *3*	28.2 *24*	1694.42	4+			
		1246.84 *10*	100 *5*	1313.06	2+			
2582.4	0+	2582.4		0.0	0+	E0		
2608.47	4+,5+	164.12[#] *16*	12[#] *3*	2444.43	5			
		346.81[#] *10*	86[#] *5*	2261.56	6+			
		482.80[#] *10*	50[#] *3*	2125.72	3+,4+	M1	0.01215	α(K)=0.01049 *15*; α(L)=0.001326 *19*; α(M)=0.000268 *4*; α(N)=5.56×10^{-5} *8*; α(O)=6.98×10^{-6} *10* B(M1)(W.u.)>0.00071
		716.7[#] *3*	28.0[#] *20*	1891.74	6+			
		914.1[#] *2*	100[#] *6*	1694.42	4+			
2634.19	1+,2+	219.33 *15*	3.3 *3*	2414.76	2+	not E1	0.0240	α(K)=0.0208 *7*; α(L)=0.00263 *8*; α(M)=0.00053 *2*; α(N+..)=0.00013
		344.72 *10*	9.7 *8*	2289.55	2+	M1+E2	0.0277 *9*	α(K)=0.0235 *11*; α(L)=0.0034 *3*; α(M)=0.00069 *6*; α(N)=0.000142 *11*; α(O)=1.71×10^{-5} *7*
		1321.08 *10*	100 *7*	1313.06	2+	M1(+E2)	0.00105 *12*	α(K)=0.00089 *11*; α(L)=0.000110 *12*; α(M)=2.21×10^{-5} *25*; α(N)=4.6×10^{-6} *5*; α(O)=5.7×10^{-7} *7*
		2634.2 *2*	27.2 *13*	0.0	0+			
2849.44	(1,2+)	1536.4 *1*	100 *6*	1313.06	2+			
		2849.2 *7*	2.6 *10*	0.0	0+			
2866.8	(8+)	975.1[b] *3*	100	1891.74	6+			
2869.02	(2+)	309.1 *2*	8.6 *9*	2559.91	(4+)			
		1555.97 *15*	11.9 *9*	1313.06	2+			
		2868.9 *2*	100 *9*	0.0	0+	(E2)		α(K)=0.000187 *3*; α(L)=2.24×10^{-5} *4*; α(M)=4.51×10^{-6} *7*; α(N)=9.35×10^{-7} *13*; α(O)=1.179×10^{-7} *17* Mult.: D,Q from γ(θ) in ^{136}Xe(γ,γ′), E2 from level scheme.
2979.09	1+,2+	1666.0 *4*	57 *9*	1313.06	2+			
		2979.1 *3*	100 *9*	0.0	0+			
3211.92	(1,2+)	362.5 *4*	25 *4*	2849.44	(1,2+)			
		3211.8 *3*	100 *7*	0.0	0+			
3229.2	8+	967.6[b] *3*	100	2261.56	6+	E2	1.74×10^{-3}	α(K)=0.001501 *21*; α(L)=0.000193 *3*; α(M)=3.91×10^{-5} *6*; α(N)=8.07×10^{-6} *12*; α(O)=1.000×10^{-6} *14* Mult.: Q from γγ(θ) in ^{238}U(^{12}C,Fγ),^{208}Pb(^{18}O,Fγ), E2 from band assignment.
3275.26	3−	1962.2 *3*	100	1313.06	2+			
3350.0	(1,2)	3350[@]	100	0.0	0+	D,Q[&]		

$^{136}_{54}Xe_{82}$-8

Adopted Levels, Gammas (continued)

γ(^{136}Xe) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	α	Comments
3483.8	10^+	254.6[b] *3*	100[b] *16*	3229.2	8^+	E2	0.0714	α(K)=0.0580 *9*; α(L)=0.01068 *16*; α(M)=0.00222 *4*; α(N)=0.000449 *7*; α(O)=5.07×10^{-5} *8* Mult.: Q from γγ(θ) in ^{238}U(^{12}C,Fγ),^{208}Pb(^{18}O,Fγ), E2 from band assignment.
		617.0[b] *3*	89[b] *14*	2866.8	(8^+)			
3626.1	1	2313[@]	100[@] *16*	1313.06	2^+			
		3626[@] *1*	32[@]	0.0	0^+	D[&]		
3675	2	3675[@]	100	0.0	0^+	Q[&]		
3738	1	3738[@] *1*	100	0.0	0^+	D[&]		
3830.0	(9^-)	600.8[b] *4*	100	3229.2	8^+			
3830.08	$(6^+,5)$	1385.6[#] *4*	26[#] *4*	2444.43	5			
		1937.4[#] *5*	30[#] *6*	1891.74	6^+			
		2135.8[#] *2*	100[#] *7*	1694.42	4^+			
3872.84	$(6^+,5)$	2178.4[#] *2*	100	1694.42	4^+			
3873.18	(3^-)	597.8 *2*	100 *11*	3275.26	3^-			
		1583.5 *2*	70 *9*	2289.55	2^+			
4057.63	$(6^+,5)$	1592.8[#] *2*	36[#] *4*	2465.05				
		1796.0[#] *2*	100[#] *7*	2261.56	6^+			
		2165.8[#] *15*	10[#] *9*	1891.74	6^+			
		2362.8[#] *3*	59[#] *6*	1694.42	4^+			
4269.36	$2^{(+)}$	396.0 *2*	26 *3*	3873.18	(3^-)			
		994.2 *2*	100 *5*	3275.26	3^-			
		1057.4 *4*	18 *3*	3211.92	$(1,2^+)$			
		1399.9 *5*	6.6 *17*	2869.02	(2^+)			
		1635.2 *2*	23.1 *25*	2634.19	$1^+,2^+$			
		1709.4 *2*	43 *3*	2559.91	(4^+)			
		1979.6 *3*	8.3 *12*	2289.55	2^+			
		2956.3 *2*	44.6 *25*	1313.06	2^+			
		4269.5 *2*	21.9 *13*	0.0	0^+			
4320.1	0^+	4320		0.0	0^+	E0		
4380.4	(8^+)	1151.2[b] *3*	100	3229.2	8^+			
4454.10	$1^{(-)},2^{(+)}$	1178.6 *3*	32 *5*	3275.26	3^-			
		1820.0 *3*	31 *4*	2634.19	$1^+,2^+$			
		2039.2 *4*	23 *4*	2414.76	2^+			
		3141.1 *3*	100 *6*	1313.06	2^+			
		4454.5 *7*	5.8 *15*	0.0	0^+			
4474.06	1	1624.8[e] *3*	100 *14*	2849.44	$(1,2^+)$			
		4473.8 *3*	57 *6*	0.0	0^+	D[&]		
4545.0	$1,2^{(+)}$	1911.1 *4*	100 *22*	2634.19	$1^+,2^+$			

$^{136}_{54}Xe_{82}$-9

Adopted Levels, Gammas (continued)

γ(^{136}Xe) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	Comments
4545.0	1,2$^{(+)}$	4544.4 *5*	61 *12*	0.0	0$^+$		
4711.2	1	4711.1 *4*	100	0.0	0$^+$	D[&]	
4857.0	(11$^-$)	1027.1[b] *4*	17[b] *9*	3830.0	(9$^-$)		
		1373.2[b] *3*	100[b] *22*	3483.8	10$^+$		
4890	1	4890[@] *1*	100	0.0	0$^+$	D[&]	
4929	1	4929[@] *1*	100	0.0	0$^+$	D[&]	
4947.44		1968.4 *4*	100 *16*	2979.09	1$^+$,2$^+$		
		2312.8[da] *5*	40 *5*	2634.19	1$^+$,2$^+$		I_γ: from ^{136}I β^- decay (83.4 s + 46.6 s).
		2657.9[d] *4*	56 *8*	2289.55	2$^+$		
		3634.6[d] *5*	72 *8*	1313.06	2$^+$		
5017.01	(1,2$^+$)	2168.2 *11*	28 *25*	2849.44	(1,2$^+$)		
		2382.7 *3*	100 *13*	2634.19	1$^+$,2$^+$		
		2601.8 *9*	56 *28*	2414.76	2$^+$		
		5017.0 *3*	41 *4*	0.0	0$^+$		
5128	1	5128[@] *1*	100	0.0	0$^+$	D[&]	
5141.0	(13$^-$)	284.0[b] *4*	100[b] *30*	4857.0	(11$^-$)		
		1657.0[b] *5*	70[b] *30*	3483.8	10$^+$		
5187	1	5187[@] *1*	100	0.0	0$^+$	D[&]	
5217.8		2657.9[d] *4*	350 *50*	2559.91	(4$^+$)		
		5217.5 *11*	100 *35*	0.0	0$^+$		
5321.06?	(1$^+$,2$^+$)	3195.4[e] *4*	100 *12*	2125.72	3$^+$,4$^+$		
		5320.9[e] *3*	44 *8*	0.0	0$^+$		
5322	1	5322[@] *1*	100	0.0	0$^+$	D[&]	
5352	1	5352[@] *1*	100	0.0	0$^+$	D[&]	
5458	1,2	5458[@] *1*	100	0.0	0$^+$	D,Q[&]	
5481.7	(10$^+$)	1101.3 *3*	100	4380.4	(8$^+$)		
5608.2	1	3482.6[dae] *4*	62 *7*	2125.72	3$^+$,4$^+$		I_γ: from ^{136}I β^- decay (83.4 s + 46.6 s).
		5608.0 *4*	100 *23*	0.0	0$^+$	D[&]	I_γ: from ^{136}I β^- decay (83.4 s + 46.6 s).
5639	1	5639[@] *1*	100	0.0	0$^+$	D[&]	
5651	1	5651[@] *1*	100	0.0	0$^+$	D[&]	
5728	1	5728[@] *1*	100	0.0	0$^+$	D[&]	
5760.3		2548.2 *4*	100 *21*	3211.92	(1,2$^+$)		
		3200.5[da] *10*	37 *16*	2559.91	(4$^+$)		I_γ: from ^{136}I β^- decay (83.4 s + 46.6 s).
		3634.6[d] *5*	95 *11*	2125.72	3$^+$,4$^+$		
5800.2	1	3673.9[e] *4*	100 *8*	2125.72	3$^+$,4$^+$		
		5800.5 *4*	76 *16*	0.0	0$^+$	D[&]	
5832.2?	(2$^+$,3,4$^+$)	3272.2[e] *7*	100 *23*	2559.91	(4$^+$)		

$^{136}_{54}Xe_{82}$-10

Adopted Levels, Gammas (continued)

γ(^{136}Xe) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	Comments
5832.2?	(2$^+$,3,4$^+$)	4519.1[e] *10*	17 *8*	1313.06	2$^+$		
5861.6?	(4$^+$,5,6$^+$)	3600.0[#e] *6*	70[#] *15*	2261.56	6$^+$		
		3735.9[#e] *5*	100[#] *16*	2125.72	3$^+$,4$^+$		
5870.8	1	5870.7 *12*	100	0.0	0$^+$	D[&]	
5879.9	(11$^+$)	398.2[b] *4*	100	5481.7	(10$^+$)		
5888	1	5888[@] *1*	100	0.0	0$^+$	D[&]	
5914	1	5914[@] *1*	100	0.0	0$^+$	D[&]	
5950.8	(12$^+$)	(70.7[b])		5879.9	(11$^+$)		
		469.1[b] *5*	15[b] *7*	5481.7	(10$^+$)		
		1093.7[b] *3*	100[b] *30*	4857.0	(11$^-$)		E_γ: other: 1094.3 *10* in ^{248}Cm SF Decay.
		2467.2 *5*	45 *23*	3483.8	10$^+$		
5968.5?	(1,2$^+$)	5968.4[e] *10*	100	0.0	0$^+$		
6003	1,2	6003[@] *1*	100	0.0	0$^+$	D,Q[&]	
6013.0?	(1,2$^+$)	6012.9[e] *10*	100	0.0	0$^+$		
6030	1,2	6030[@] *1*	100	0.0	0$^+$	D,Q[&]	
6052.6?	(1,2$^+$)	4739.1[e] *5*	100 *13*	1313.06	2$^+$		
		6052.8[e] *5*	50 *13*	0.0	0$^+$		
6091.3?		3482.6[dae] *4*	344[a] *38*	2608.47	4$^+$,5$^+$		
		3626.4[dae] *4*	625[a] *50*	2465.05			
		4396.3[#e] *8*	100[#] *31*	1694.42	4$^+$		
6103.9	1$^-$	2828.5[e] *3*	75 *10*	3275.26	3$^-$		
		6104.2 *6*	100 *20*	0.0	0$^+$	E1	Mult.: D from $\gamma(\theta)$ in (γ,γ'), $\Delta\pi$=yes from level scheme.
6114.5	1	6114.4 *7*	100	0.0	0$^+$	D[&]	
6126.4	1	6126.3 *5*	100	0.0	0$^+$	D[&]	
6155.6	(14$^-$)	1014.6[b] *4*	100	5141.0	(13$^-$)		
6169.9?	(1,2$^+$)	6169.7[e] *8*	100	0.0	0$^+$		
6170.3	(13$^+$)	219.5[b] *3*	100	5950.8	(12$^+$)		E_γ: other: 221.0 *1* in ^{248}Cm SF decay.
6186.38?		2312.8[dae] *5*	83[a] *17*	3873.18	(3$^-$)		
		3626.4[dae] *4*	207[a] *17*	2559.91	(4$^+$)		
		3925.0[ae] *4*	100[a] *16*	2261.56	6$^+$		
		4873.4[ae] *9*	23[a] *10*	1313.06	2$^+$		
6200.1?	(1,2$^+$)	6199.9[e] *13*	100	0.0	0$^+$		
6227	1	6227[@] *1*	100	0.0	0$^+$	D[&]	
6253.5	1	6253.3 *8*	100	0.0	0$^+$	D[&]	
6301	1	6301[@] *1*	100	0.0	0$^+$	D[&]	
6310	1	6310[@] *1*	100	0.0	0$^+$	D[&]	
6324	1	6324[@] *1*	100	0.0	0$^+$	D[&]	

$^{136}_{54}Xe_{82}$-11

Adopted Levels, Gammas (continued)

γ(^{136}Xe) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]
6354	1	6354[@] *1*	100	0.0	0^+	D[&]
6372	1	6372[@] *1*	100	0.0	0^+	D[&]
6409.0?	$(1,2^+)$	3775.0[de] *10*	143 *64*	2634.19	$1^+,2^+$	
		6408.5[e] *12*	100 *36*	0.0	0^+	
6412.3		3200.5[dae] *10*	50[a] *21*	3211.92	$(1,2^+)$	
		3967.8[ae] *5*	100[a] *13*	2444.43	5	
6430	1	6430[@] *1*	100	0.0	0^+	D[&]
6455	1	6455[@] *1*	100	0.0	0^+	D[&]
6493	1	6493[@] *1*	100	0.0	0^+	D[&]
6509	1	6509[@] *1*	100	0.0	0^+	D[&]
6527	1	6527[@] *1*	100	0.0	0^+	D[&]
6562	1	6562[@] *1*	100	0.0	0^+	D[&]
6577	1	6577[@] *1*	100	0.0	0^+	D[&]
6611.6	(14^+)	441.2[b] *3*	100	6170.3	(13^+)	
6624.10		3349.2 *3*	100 *10*	3275.26	3^-	
		3775.0[de] *10*	14 *6*	2849.44	$(1,2^+)$	
		4063.9[e] *4*	86 *10*	2559.91	(4^+)	
		4208.9 *5*	24 *6*	2414.76	2^+	
		4929.4 *3*	59 *6*	1694.42	4^+	
6665	1	6665[@] *1*	100	0.0	0^+	D[&]
6684	1	6684[@] *1*	100	0.0	0^+	D[&]
6691	1	6691[@] *1*	100	0.0	0^+	D[&]
6704	1	6704[@] *1*	100	0.0	0^+	D[&]
6715	1	6715[@] *1*	100	0.0	0^+	D[&]
6734	1	6734[@] *1*	100	0.0	0^+	D[&]
6737.8	(14^+)	567.5[b] *5*	100	6170.3	(13^+)	
6771	1	6771[@] *1*	100	0.0	0^+	D[&]
6797	1	6797[@] *1*	100	0.0	0^+	D[&]
6808	1	6808[@] *1*	100	0.0	0^+	D[&]
6861	1	6861[@] *1*	100	0.0	0^+	D[&]
6869	1	6869[@] *1*	100	0.0	0^+	D[&]
6884	1	6884[@] *1*	100	0.0	0^+	D[&]
6942	1	6942[@] *1*	100	0.0	0^+	D[&]
6968	1	6968[@] *1*	100	0.0	0^+	D[&]
7013	1	7013[@] *1*	100	0.0	0^+	D[&]
7023	1	7023[@] *1*	100	0.0	0^+	D[&]
7053	1	7053[@] *1*	100	0.0	0^+	D[&]
7067.6	(15^+)	329.8[b] *4*	100[b] *30*	6737.8	(14^+)	
		455.9[b] *4*	100[b] *30*	6611.6	(14^+)	
		897.5[b] *4*	100[b] *30*	6170.3	(13^+)	
7071	1	7071[@] *1*	100	0.0	0^+	D[&]
7082	1	7082[@] *1*	100	0.0	0^+	D[&]
7094	1	7094[@] *1*	100	0.0	0^+	D[&]
7121	1	7121[@] *1*	100	0.0	0^+	D[&]
7134	1	7134[@] *1*	100	0.0	0^+	D[&]
7165	1	7165[@] *1*	100	0.0	0^+	D[&]
7193	1	7193[@] *1*	100	0.0	0^+	D[&]
7200	1	7200[@] *1*	100	0.0	0^+	D[&]
7212	1	7212[@] *1*	100	0.0	0^+	D[&]
7232	1	7232[@] *1*	100	0.0	0^+	D[&]
7245	1	7245[@] *1*	100	0.0	0^+	D[&]
7343	1	7343[@] *1*	100	0.0	0^+	D[&]
7370	1	7370[@] *1*	100	0.0	0^+	D[&]
7512.1	(16^+)	444.5[b] *4*	100	7067.6	(15^+)	
7635.6		568.0[b] *5*	100[b]	7067.6	(15^+)	
7692	1	7692[@] *1*	100	0.0	0^+	D[&]
7727	1	7727[@] *1*	100	0.0	0^+	D[&]
7848.5		336.4[b] *4*	100	7512.1	(16^+)	
7883	1	7883[@] *1*	100[@]	0.0	0^+	D[&]
7908	1	7908[@] *1*	100	0.0	0^+	D[&]
7947.5	(17^+)	435.4[b] *4*	100	7512.1	(16^+)	
7990	1	7990[@] *1*	100	0.0	0^+	D[&]
8024	1	8024[@] *1*	100	0.0	0^+	D[&]
8051	1	8051[@] *1*	100	0.0	0^+	D[&]
8066	1	8066[@] *1*	100	0.0	0^+	D[&]
8093	1	8093[@] *1*	100	0.0	0^+	D[&]

[†] From ^{136}I β^- decay (83.4 s), except where noted.

$^{136}_{54}Xe_{82}$-12

Adopted Levels, Gammas (continued)

$\gamma(^{136}Xe)$ (continued)

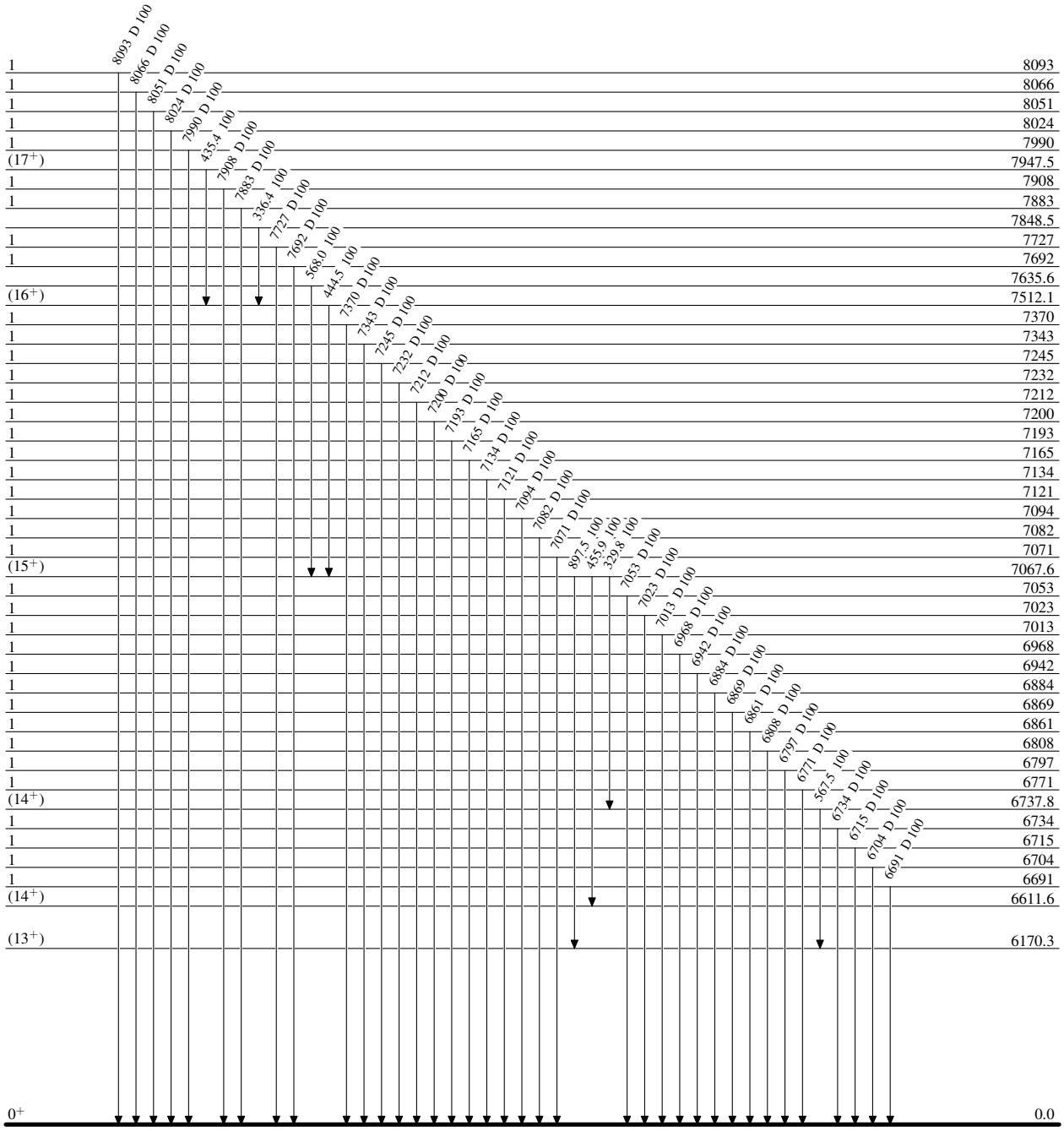
‡ From ce measurements in ^{136}I β^- decay, except where noted.
# From ^{136}I β^- decay (46.9 s).
@ From (γ,γ').
& From $\gamma(\theta)$ in (γ,γ').
a From ^{136}I β^- decay (83.4s + 46.9 s).
b From $^{238}U(^{12}C,F\gamma)$,$^{208}Pb(^{18}O,F\gamma)$.
c From $^{136}Xe(n,n'\gamma)$.
d Multiply placed.
e Placement of transition in the level scheme is uncertain.

$^{136}_{54}Xe_{82}$-13

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



$^{136}_{54}Xe_{82}$

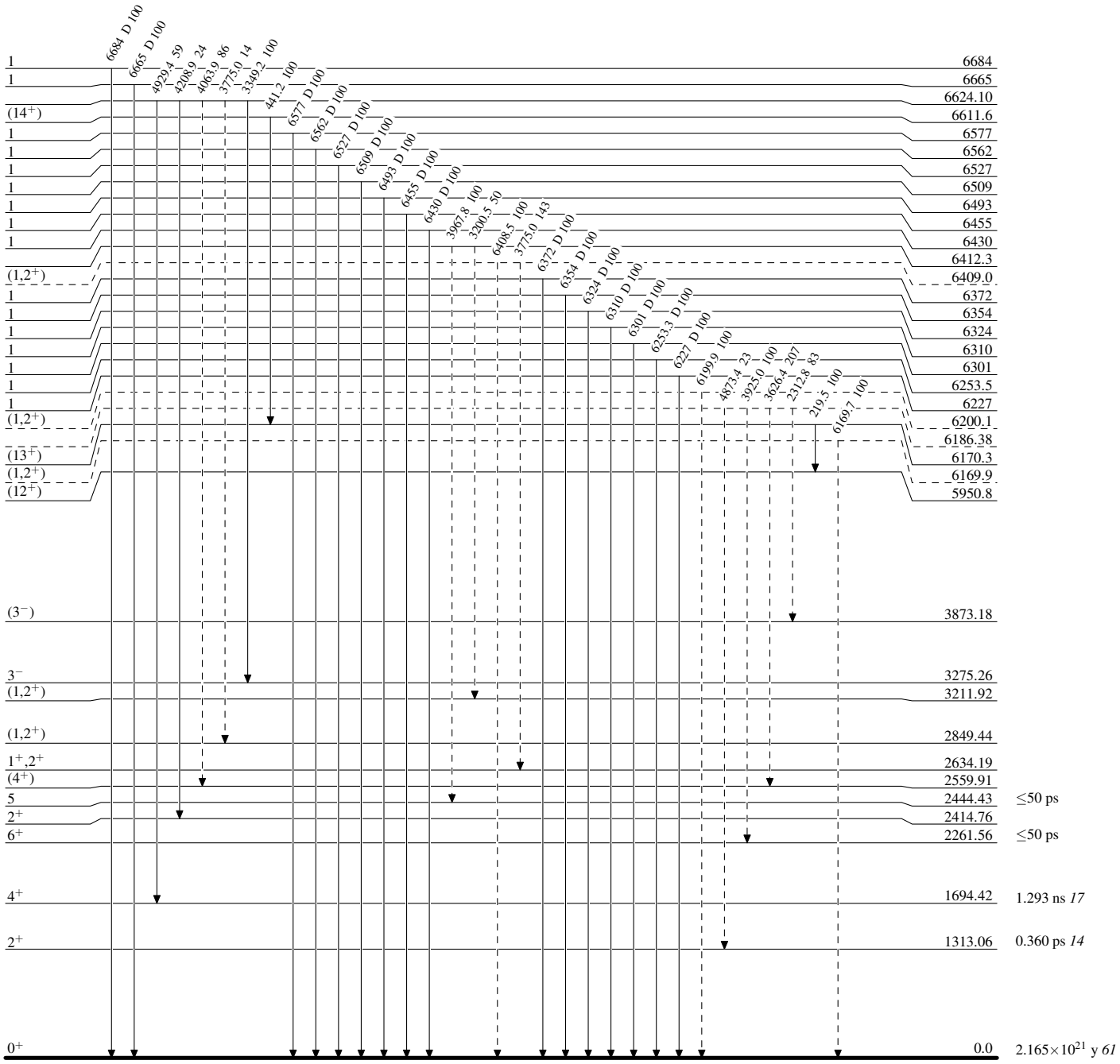
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{136}_{54}Xe_{82}$

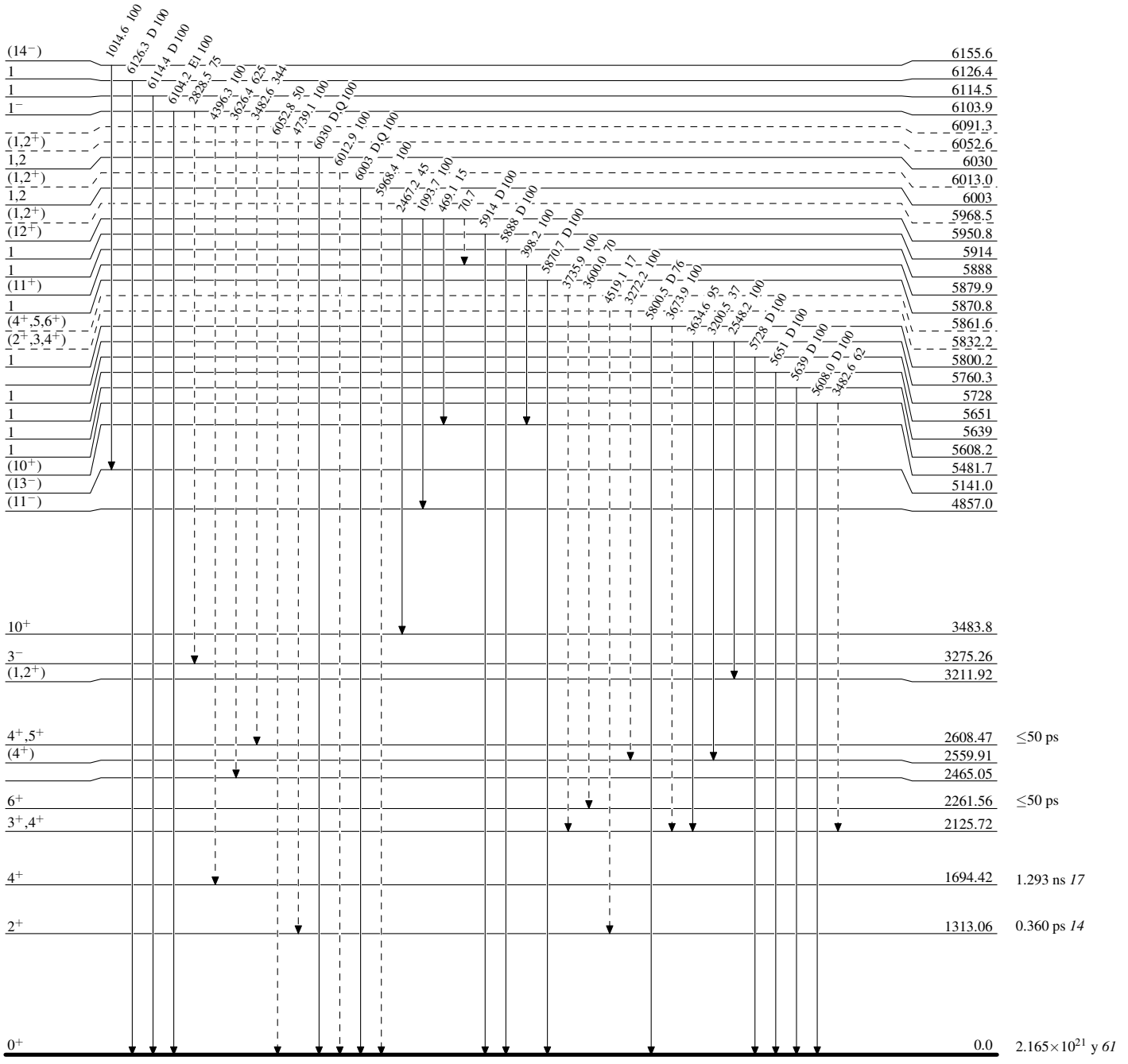
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{136}_{54}Xe_{82}$

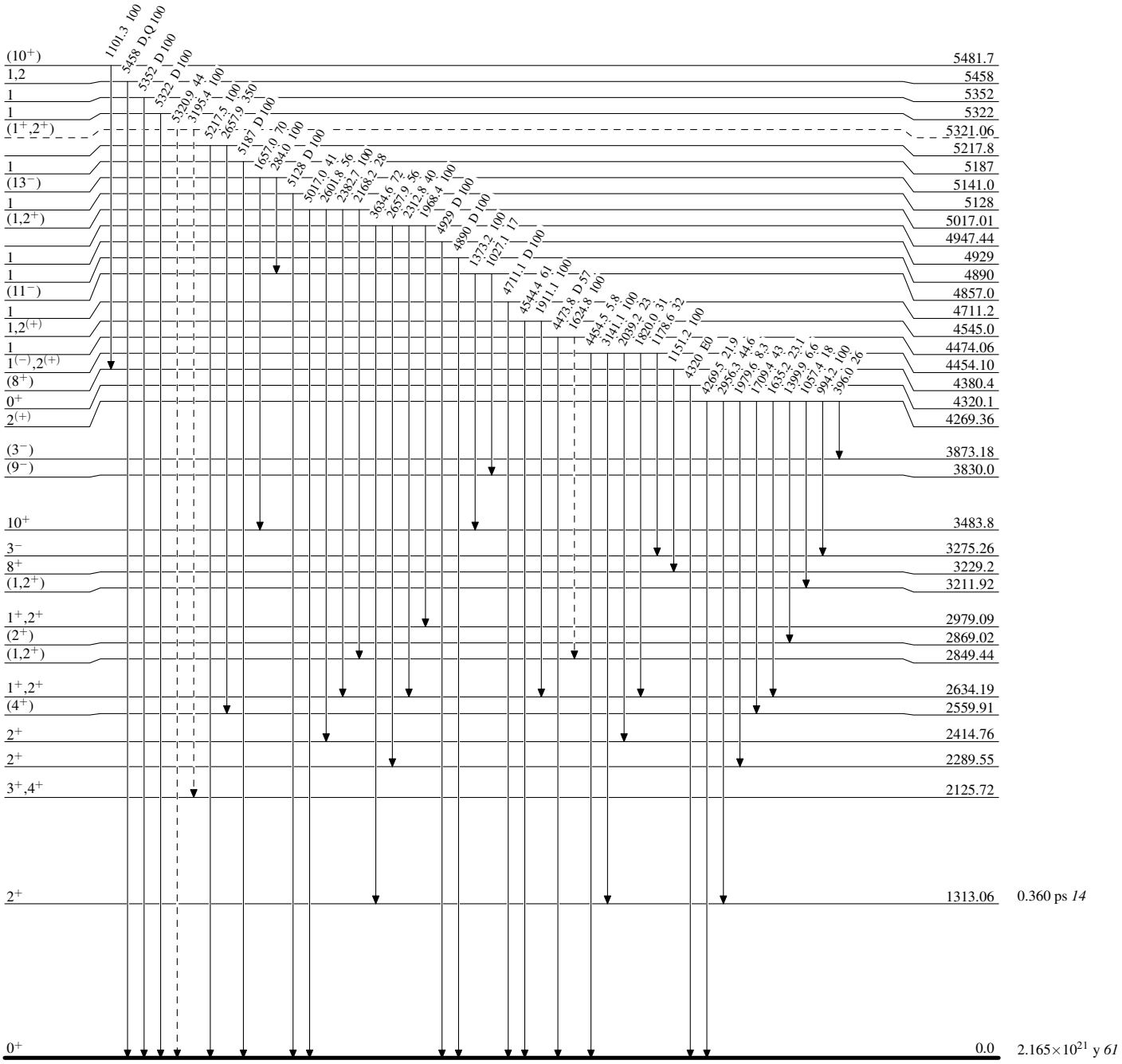
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

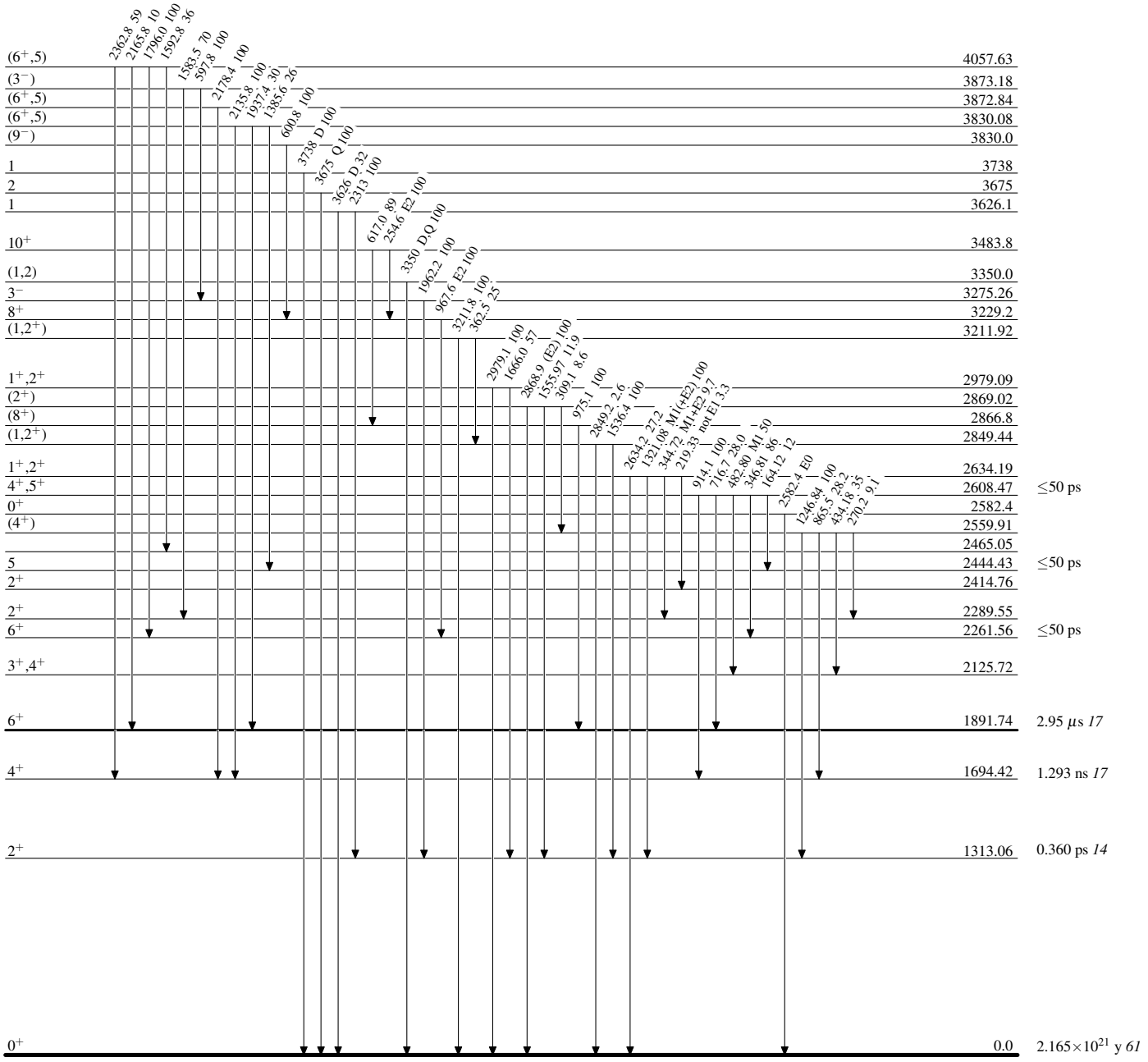


$^{136}_{54}Xe_{82}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

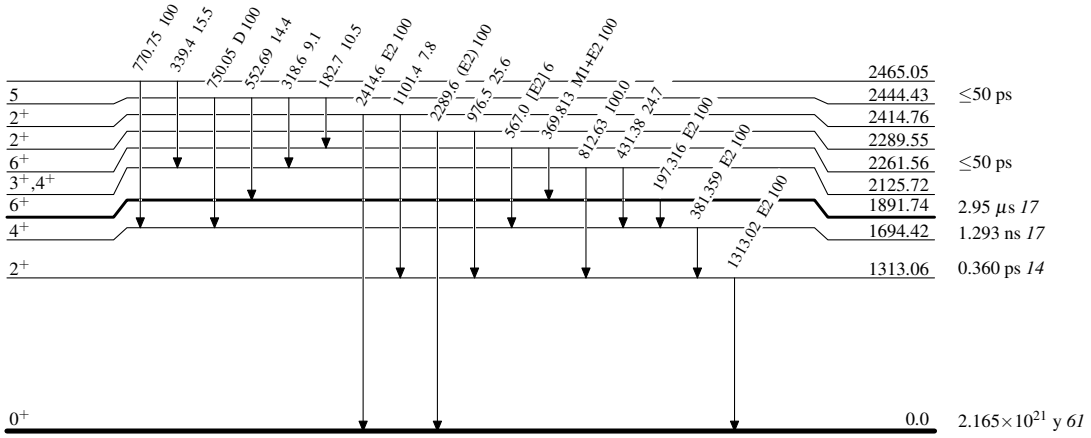


$^{136}_{54}Xe_{82}$

Adopted Levels, Gammas

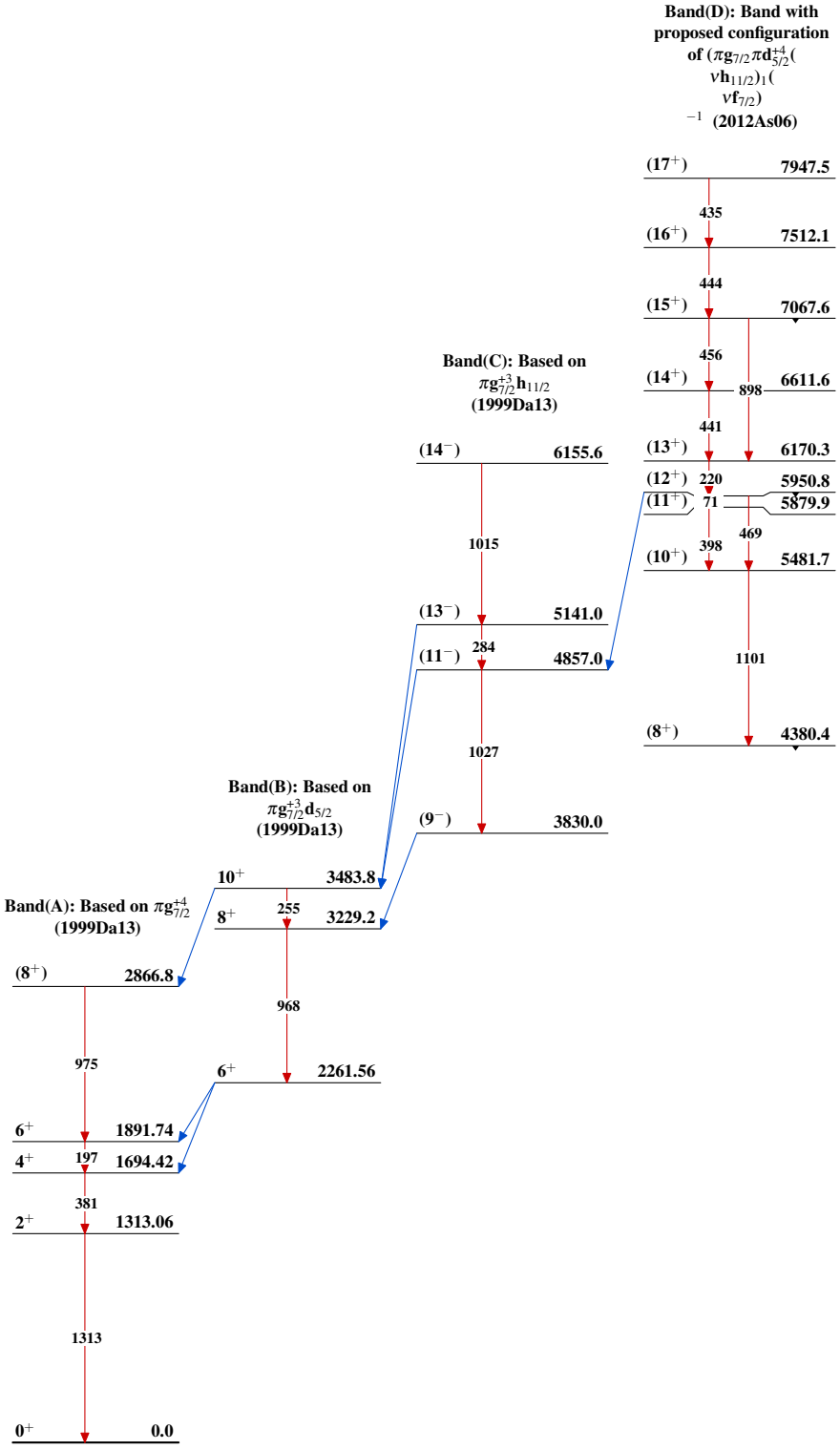
Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{136}_{54}Xe_{82}$

Adopted Levels, Gammas



$^{136}_{54}Xe_{82}$