Adopted Levels, Gammas

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Yu. Khazov, I. Mitropolsky, A. Rodionov	NDS 107, 2715 (2006)	17-Jul-2006

Q(β^-)=−355 *5*; S(n)=6604.49 *22*; S(p)=8766 *4*; Q(α)=−2556.9 *16* 2012Wa38
Note: Current evaluation has used the following Q record.
Q(β^-)=−355 *5*; S(n)=6604.8 *12*; S(p)=8772 *3*; Q(α)=−2559.0 *18* 2003Au03
Isotope shifts are measured by 1988Ge05, 1989Bo03, 1989Pl03, 1993Wa26, 1999Da22, 2000Da33, 2001Br28, 2003Sa20.
Charge radii are measured by 1988Ge05, 1989Bo03, 1989Pl03, 2003Sa20.

^{131}Xe Levels

Cross Reference (XREF) Flags

A	^{131}I β^- decay	E	^{131}Xe(γ,γ) res
B	^{131}Xe IT decay	F	^{131}Xe(γ,γ')
C	^{131}Cs ε decay	G	Coulomb excitation
D	^{128}Te(α,nγ), ^{130}Te(α,3nγ)		

E(level)†	J$^\pi$	T$_{1/2}$	XREF	Comments
0.0	3/2$^+$	stable	ABCDEFG	μ=+0.691862 *4* (1968Br12); Q=−0.114 *1* (2001Ke15) J$^\pi$: optical spectroscopy (1976Fu06); log *ft*=5.5 from 5/2$^+$. μ: from nuclear magnetic resonance. Other: +0.6915 *2* (1990NeZY). Q: colinear fast beam LASER spectroscopy, recalculated by 2001Ke15 from Q=−0.117 *6* of 2000Pa02. Others: −0.116 *4*(1989Bo03), −0.120 *12* (1961Fa05).
80.1854 *19*	1/2$^+$	0.48 ns *3*	A DE G	T$_{1/2}$: weighted average of 0.504 ns *17* (γ,γ Res) and 0.454 ns *20* (^{131}I β^- decay). J$^\pi$: $\gamma\gamma(\theta)$ in ^{131}I β^- decay; M1+E2 γ to 3/2$^+$.
163.930 *8*	11/2$^-$	11.84 d *4*	AB D	%IT=100 μ=−0.994048 *6* (1986Ki16); Q=+0.73 *3* (1990NeZY) T$_{1/2}$: from ^{131}Xe IT decay. J$^\pi$: M4 γ to 3/2$^+$. μ: from nuclear magnetic resonance. Others: 0.9940 *5* (1987Ed01), −0.994 *2* (1990NeZY). Q: Collinear fast beam LASER spectroscopy.
341.144 *9*	9/2$^-$	1.6 ns *4*	A D	T$_{1/2}$: from ^{131}I β^- decay. J$^\pi$: $\gamma(\theta)$ in ^{131}I β^- decay; M1+E2 γ to 11/2$^-$.
364.490 *4*	5/2$^+$	69 ps *2*	A DE G	T$_{1/2}$: unweighted average of 67.5 ps *14* (^{131}I β^- decay) and 70 ps *2* (Coul. ex.). Other: 51 ps *4* (γ,γ). J$^\pi$: log *ft*=6.7 from 7/2$^+$ parent; E2 γ to 1/2$^+$.
404.815 *4*	3/2$^+$‡	18 ps *3*	A D G	T$_{1/2}$: from Coul. ex.
565.19 *15*	(1/2,3/2)$^+$	5.9 ps *11*	FG	T$_{1/2}$: from Coul ex. J$^\pi$: Coul. ex.; no ε decay from 7/2$^+$ parent.
636.990 *4*	7/2$^+$‡	6.1 ps *5*	A DE G	T$_{1/2}$: from Coul. ex. Other: 4.2 ps *4* (γ,γ).
666.934 *9*	7/2$^-$	<0.5 ns	A D	T$_{1/2}$: from ^{131}I β^- decay. J$^\pi$: $\gamma(\theta)$ in ^{131}I β^- decay; M1+E2 γ to 9/2$^-$.
699.90 *10*	3/2$^+$		D G	J$^\pi$: from Coul. ex.; $\gamma(\theta)$, γ(lin. pol.) (α,nγ).
722.909 *4*	5/2$^+$	0.53 ps *5*	A DE G	J$^\pi$: log *ft*=7.0 from 7/2$^+$ parent; M1+E2 γ to 3/2$^+$. T$_{1/2}$: from B(E2) in Coul. ex. Other: 0.53 ps *9* (γ,γ).
805.93 *20*	15/2$^-$		D	J$^\pi$: stretched E2 γ to 11/2$^-$.
913.84 *14*			G	
952.29 *15*			D	
971.22 *13*	(9/2$^+$)		D	J$^\pi$: stretched (E2) γ to 5/2$^+$.
973.11 *14*	7/2$^+$	4.9 ps *9*	D G	J$^\pi$: Coul. ex.; E2 γ to 3/2$^+$.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{131}Xe Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$	XREF	Comments
				$T_{1/2}$: from B(E2) in Coul. ex.
994.42 *20*			D	
1034.32 *20*	(5/2)$^{+}$[#]		D	
1045.55 *20*	(13/2)$^{-}$[#]		D	
1113.28 *15*	(9/2)$^{-}$		D	Jπ: M1+E2 γ to 11/2^{-}, (M1+E2) γ to 7/2^{-}.
1156.55 *20*	(11/2)$^{-}$[#]		D	
1191.15 *20*	(11/2^{-})[#]		D	
1245.0 *10*			D	
1320.25 *20*	(13/2^{-})[#]		D	
1397.34 *17*	11/2^{+}		D	Jπ: stretched E2 γ to 7/2^{+}.
1456.29 *20*	(9/2)$^{+}$[#]		D	
1584.18 *19*	(13/2^{+})[#]		D	
1600.6 *3*	17/2^{-}		D	Jπ: ΔJ=1 M1,E2 γ to 15/2^{-}.
1616.3 *3*	19/2^{-}		D	Jπ: stretched E2 γ to 15/2^{-}.
1621.02 *24*			D	
1641.42 *24*	(11/2^{+})[#]		D	
1654.22 *24*	(13/2^{+})[#]		D	
1665			F	B(M1)↑=0.11 *3*; B(E1)↑=1.2 *3*
1721.91 *25*	(11/2)[#]		D	
1804.42 *24*			D	
1805.3 *3*	19/2^{+}	14 ns *3*	D	$T_{1/2}$: from (α,3nγ) (1971Ke13). Jπ: ΔJ=1 E1 γ to 17/2^{-}.
1860.7 *3*	(17/2)$^{-}$[#]		D	
1997.8 *4*	(17/2^{+})[#]		D	
2007			F	B(M1)↑=0.071 *16*; B(E1)↑=0.78 *18*
2089.5 *3*	(19/2)[#]		D	
2194.3 *5*	(23/2^{+})		D	Jπ: stretched (E2) γ to 19/2^{+}.
2249.3 *5*	(21/2^{+})[#]		D	
2297.1 *4*	(15/2^{+})[#]		D	
2359			F	B(M1)↑=0.020 *11*; B(E1)↑=0.22 *12*
2378			F	B(M1)↑=0.066 *9*; B(E1)↑=0.73 *10*
2396			F	B(M1)↑=0.030 *8*; B(E1)↑=0.33 *9*
2517.8 *4*			D	
2570			F	B(M1)↑=0.035 *7*; B(E1)↑=0.39 *8*
2601			F	B(M1)↑=0.039 *8*; B(E1)↑=0.43 *8*
2662			F	B(M1)↑=0.029 *6*; B(E1)↑=0.33 *7*
2675			F	B(M1)↑=0.035 *7*; B(E1)↑=0.39 *8*
2833			F	B(M1)↑=0.036 *7*; B(E1)↑=0.40 *8*
2848			F	B(M1)↑=0.071 *12*; B(E1)↑=0.78 *13*
2852			F	B(M1)↑=0.047 *10*; B(E1)↑=0.52 *11*
3088			F	B(M1)↑=0.101 *13*; B(E1)↑=1.120 *15* Branching ratio to 565 keV $R_{exp.1}$=6.6 *20*.
3126			F	B(M1)↑=0.033 *3*; B(E1)↑=0.37 *7*
3175			F	B(M1)↑=0.021 *6*; B(E1)↑=0.24 *7*
3185.9 *6*			D	

[†] From least-squares fit to Eγ's, resulted normalized χ^2=0.6.
[‡] From γ(θ) and γ linear polarization measurements in (α,nγ).
[#] From γ(θ), α(K)exp, and decay pattern in (α,nγ), (α,3nγ).

Adopted Levels, Gammas (continued)

γ(^{131}Xe)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[a]	δ[&]	α[b]	Comments
80.1854	1/2+	80.185 *2*	100	0.0	3/2+	M1+E2	<0.1	1.57	B(M1)(W.u.)>0.032; B(E2)(W.u.)<37 δ: estimated by evaluators from α(exp).
163.930	11/2−	163.930 *8*	100	0.0	3/2+	M4		50.2	B(M4)(W.u.)=2.76 *9*
341.144	9/2−	177.214 *2*	100	163.930	11/2−	M1+E2	−4.3 *4*	0.241 *1*	B(M1)(W.u.)=0.00010 *4*; B(E2)(W.u.)=39 *10*
364.490	5/2+	284.305 *5*	7.53[@] *6*	80.1854	1/2+	E2		0.0500	B(E2)(W.u.)=7.64 *24*
		364.489 *5*	100.0[@] *7*	0.0	3/2+	M1+E2	−4.34 *19*	0.0228	α(K)exp=0.0192 *11* B(M1)(W.u.)=0.00030 *3*; B(E2)(W.u.)=27.8 *9* δ: weighted average of −4.0 *10* (1961Ha08), −3.4 *6* (1970La19), −3.3 *6* (1972Kr07), −4.53 *12* (1974Ko02), −3.8 *3*(1979Ir01); other: −6.75 (1960Jo11).
404.815	3/2+	324.651 *25*	39[#] *5*	80.1854	1/2+	M1+E2	−0.8 *7*	0.0331 *4*	B(M1)(W.u.)=0.006 *5*; B(E2)(W.u.)=24 *+26−24*
		404.814 *4*	100[#] *3*	0.0	3/2+	M1+E2	+1.0 *+10−8*	0.0178 *13*	B(M1)(W.u.)=0.006 *6*; B(E2)(W.u.)=3.E+1 *3*
565.19	(1/2,3/2)+	485.0 *2*	8.7[@] *22*	80.1854	1/2+				
		565.2 *2*	100.0[@] *22*	0.0	3/2+	[M1+E2]	0.6 *2*		B(M1)(W.u.)=0.014 *4*; B(E2)(W.u.)=10 *6* δ: from Coul. ex.
636.990	7/2+	232.18 *15*	0.044[#] *6*	404.815	3/2+	[E2]		0.098	B(E2)(W.u.)=1.52 *25*
		272.498 *17*	0.805[#] *15*	364.490	5/2+	M1+E2	−0.38 *17*	0.0535 *5*	B(M1)(W.u.)=0.00124 *18*; B(E2)(W.u.)=1.6 *13*
		295.8 *2*	0.025[#] *12*	341.144	9/2−	[E1]		0.0108	B(E1)(W.u.)=4.1×10^{-7} *20*
		636.989 *4*	100.0[#] *13*	0.0	3/2+	E2			α(K)exp=0.0042 *3* B(E2)(W.u.)=22.2 *19*
666.934	7/2−	302.4 *2*	1.32[#] *16*	364.490	5/2+	[E1]		0.0102	B(E1)(W.u.)=1.392×10^{-7} *3*
		325.789 *4*	76[#] *6*	341.144	9/2−	M1+E2	−0.23 *4*	0.0331	α(K)exp=0.034 *4* B(M1)(W.u.)=0.000511 *9*; B(E2)(W.u.)=0.17 *6*
		503.004 *4*	100.0[#] *9*	163.930	11/2−	E2			B(E2)(W.u.)=0.494532 *20*
699.90	3/2+	295.3 *2*	13[@] *7*	404.815	3/2+				
		335.4 *2*	59[@] *11*	364.490	5/2+				
		619.6 *2*	46[@] *11*	80.1854	1/2+				
		699.8 *2*	100[@] *16*	0.0	3/2+				
722.909	5/2+	85.9 *2*	0.005[#] *3*	636.990	7/2+	[M1,E2]		2.2 *10*	
		318.088 *16*	4.38[#] *10*	404.815	3/2+	M1+E2	−0.11 *8*	0.0353	B(M1)(W.u.)=0.047 *5*; B(E2)(W.u.)=4 *+6−4*
		358.4 *2*	0.9[#] *4*	364.490	5/2+	[M1,E2]		0.0249 *10*	
		642.719 *5*	12.26[#] *23*	80.1854	1/2+	[E2]			B(E2)(W.u.)=25.7 *25*
		722.911 *5*	100.0[#] *14*	0.0	3/2+	M1+E2	+0.207 *5*		α(K)exp=0.0038 *3* B(M1)(W.u.)=0.090 *9*; B(E2)(W.u.)=4.8 *5*
805.93	15/2−	642.0 *2*	100	163.930	11/2−	E2			
913.84		549.4 *2*	80[@] *15*	364.490	5/2+				

$^{131}_{54}Xe_{77}$-3

Adopted Levels, Gammas (continued)

γ(^{131}Xe) (continued)

E_i(level)	J_i^π	E_γ †	I_γ ‡	E_f	J_f^π	Mult.[a]	α[b]	Comments
913.84		833.6 *2*	100@ *8*	80.1854	1/2$^+$			
		913.8 *4*	2.0@ *15*	0.0	3/2$^+$			
952.29		285.8 *2*	7.7 *23*	666.934	7/2$^-$			
		610.7 *2*	100 *16*	341.144	9/2$^-$			
971.22	(9/2$^+$)	334.3 *2*	5.6 *14*	636.990	7/2$^+$	(M1+E2)	0.0304 *7*	
		606.6 *2*	100 *12*	364.490	5/2$^+$	(E2)		
973.11	7/2$^+$	336.2 *2*	<43	636.990	7/2$^+$			
		609	9.×10^1 *3*	364.490	5/2$^+$			
		973.0 *2*	1.0×10^2 *3*	0.0	3/2$^+$	E2		B(E2)(W.u.)=1.6 *7*
994.42		589.6 *2*	100	404.815	3/2$^+$			
1034.32	(5/2)$^+$	629.5 *2*	100	404.815	3/2$^+$	M1,E2		
1045.55	(13/2)$^-$	704.4 *2*	100	341.144	9/2$^-$	E2		
1113.28	(9/2)$^-$	446.3 *2*	38 *13*	666.934	7/2$^-$	M1,E2	0.0136 *13*	
		949.4 *2*	100 *25*	163.930	11/2$^-$	(M1,E2)		
1156.55	(11/2)$^-$	815.4 *2*	100	341.144	9/2$^-$	M1,E2		
1191.15	(11/2$^-$)	850.0 *2*	100	341.144	9/2$^-$	(M1,E2)		
1245.0		608	100	636.990	7/2$^+$			
1320.25	(13/2$^-$)	979.1 *2*	100	341.144	9/2$^-$	(E2)		
1397.34	11/2$^+$	760.4 *2*	100	636.990	7/2$^+$	E2		
1456.29	(9/2)$^+$	819.3 *2*	100	636.990	7/2$^+$	M1,E2		
1584.18	(13/2$^+$)	186.9 *2*	80 *20*	1397.34	11/2$^+$	(M1,E2)	0.17 *3*	
		612.9 *2*	1.0×10^2 *4*	971.22	(9/2$^+$)			
1600.6	17/2$^-$	794.6 *2*	100	805.93	15/2$^-$	M1,E2		
1616.3	19/2$^-$	810.4 *2*	100	805.93	15/2$^-$	E2		
1621.02		649.8 *2*	100	971.22	(9/2$^+$)			
1641.42	(11/2$^+$)	670.2 *2*	100	971.22	(9/2$^+$)	(M1,E2)		
1654.22	(13/2$^+$)	683.0 *2*	100	971.22	(9/2$^+$)	E2		
1721.91	(11/2)	748.8 *2*	100	973.11	7/2$^+$	(Q)		
1804.42		833.2 *2*	100	971.22	(9/2$^+$)			
1805.3	19/2$^+$	189.1 *2*	100 *20*	1616.3	19/2$^-$	E1	0.0360	B(E1)(W.u.)=2.4×10^{-6} *9*
		204.5 *3*	≈10	1600.6	17/2$^-$	E1	0.0291	B(E1)(W.u.)≈1.9×10^{-7}
1860.7	(17/2)$^-$	1054.8 *2*	100	805.93	15/2$^-$	M1,E2		
1997.8	(17/2$^+$)	343.6 *2*	100	1654.22	(13/2$^+$)	(E2)	0.0273	
2089.5	(19/2)	1283.6 *2*	100	805.93	15/2$^-$	(Q)		
2194.3	(23/2$^+$)	389.0 *3*	100	1805.3	19/2$^+$	(E2)	0.0186	
2249.3	(21/2$^+$)	444.0 *3*	100	1805.3	19/2$^+$	(M1,E2)	0.0138 *13*	
2297.1	(15/2$^+$)	655.7 *2*	100	1641.42	(11/2$^+$)	(E2)		
2517.8		901.5 *3*	100	1616.3	19/2$^-$			
3185.9		991.6 *3*	100	2194.3	(23/2$^+$)			

$^{131}_{54}Xe_{77}$-4

Adopted Levels, Gammas (continued)

$\gamma(^{131}Xe)$ (continued)

† Weighted average of all available data, except as noted.
‡ Relative photon branching from each level from (α,nγ), (α,3nγ), except as noted.
# From β^- decay.
@ From Coulomb excitation.
& Recommended values by 1977Kr13, except as noted.
[a] From α(exp), $\gamma\gamma(\theta)$, γ(lin. pol.).
[b] 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.

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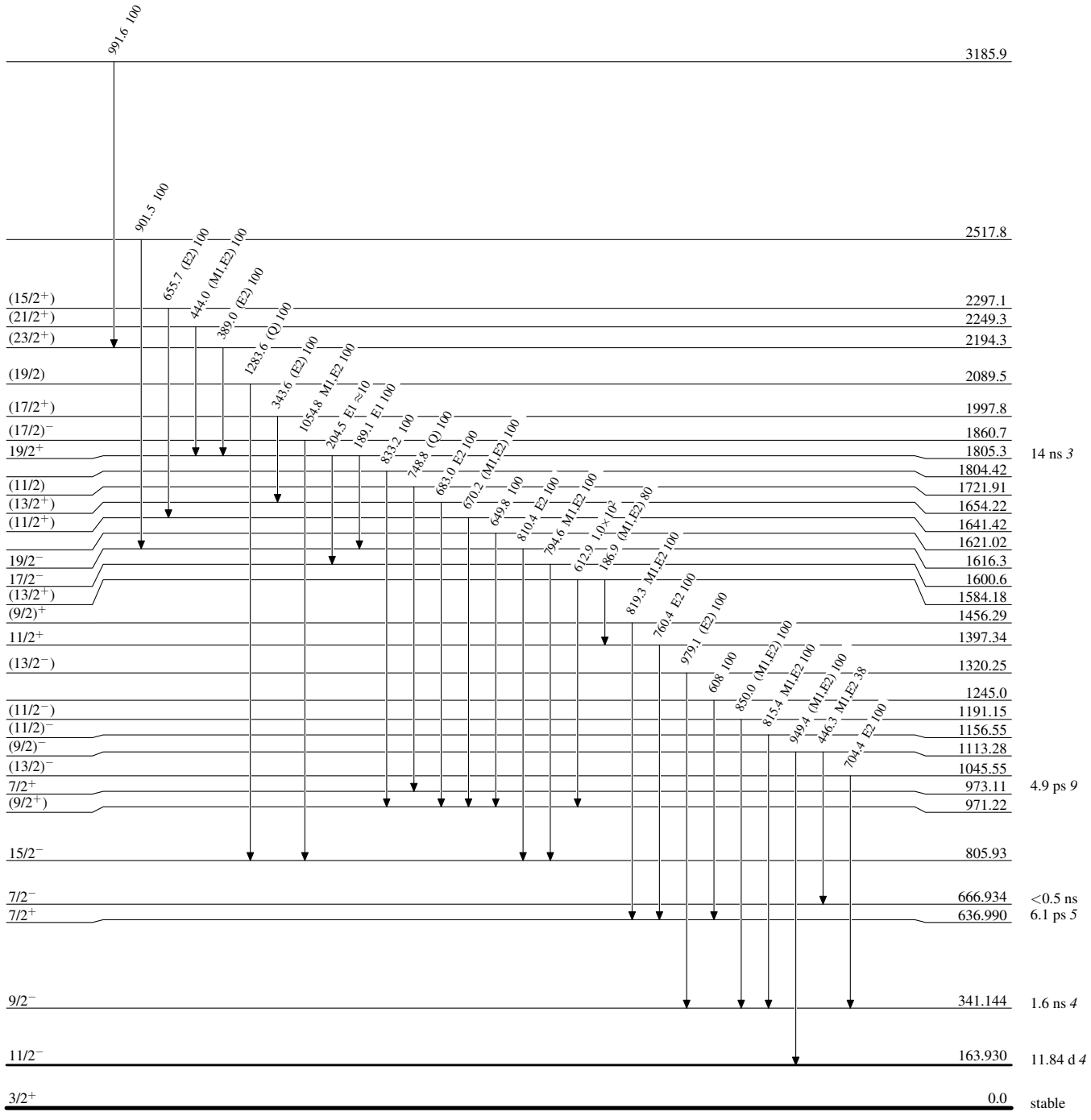
Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

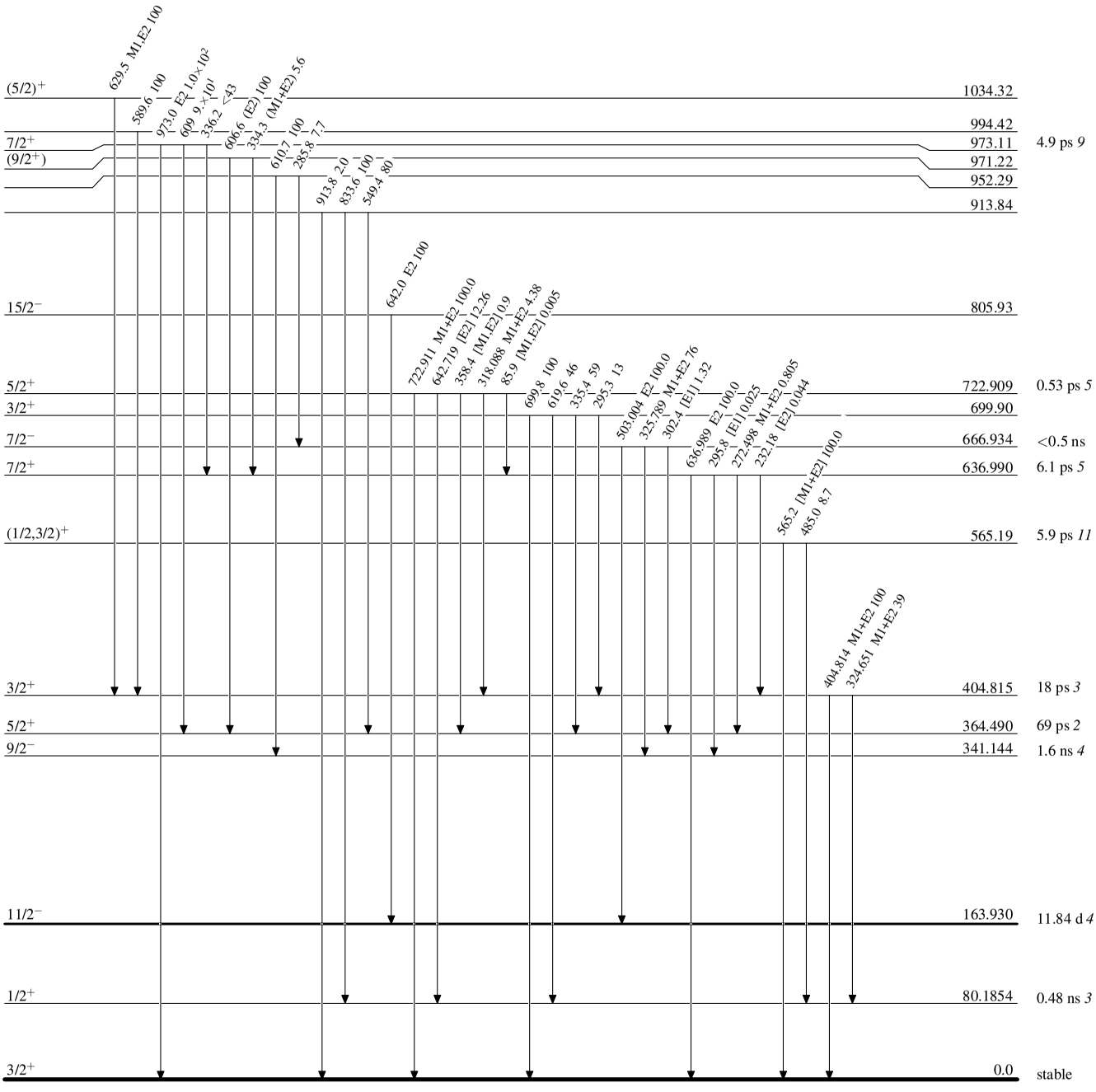


$^{131}_{54}Xe_{77}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

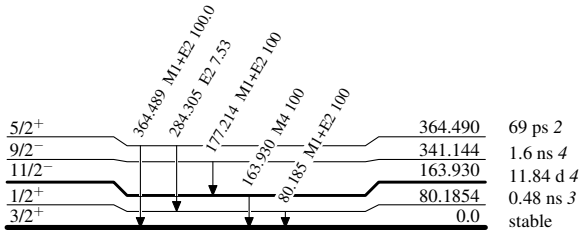


$^{131}_{54}Xe_{77}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{131}_{54}Xe_{77}$