Adopted Levels, Gammas

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	T. D. Johnson, D. Symochko(a), M. Fadil(b), and J. K. Tuli	NDS 112,1949 (2011)	1-Jun-2010

Q(β^-)=5288 *8*; S(n)=5104 *4*; S(p)=1.261×10^4 *syst*; Q(α)=−1958 *6* 2012Wa38
Note: Current evaluation has used the following Q record 5296 115104 4 *1.222e*$^+$413-1900 *120* 2011AuZZ.
Q(β^-n)=1179 *11*, Q(εp)=−2.12×10^4 *4* 2011AuZZ.
Values in 2003Au03: Q(β^-)=5040 *10*, S(n)=5220 *14*, S(p)=12250 *22* (syst.), Q(α)=−1970 *23* (syst.), Q(β^-n)=930 *10*, Q(εp)=−2.12×10^4 *4*.
Some recent theory, calculations: 2007Ji05, 2006Mo34, 1998Zh37, 1995Ba45, 1994Ma02, 1993Sh13, 1992Na07.

^{142}Xe Levels

Cross Reference (XREF) Flags

A ^{248}Cm SF decay
B Coulomb excitation

E(level)‡	Jπ†	$T_{1/2}$	XREF	Comments
0.0#	0$^+$	1.23 s *2*	AB	%β^-=100; %β^-n=0.21 *6* (2009Be05) %β^-n: Other: 0.406 *34* (1975As04). $T_{1/2}$: weighted average: 1.25 s *3* (2003Be05), 1.24 s *2* (1969Ca03), 1.18 s *4* (1967Co31), 1.15 s *4* (1965Pa14); others: 1974CrZT, 1971Kr22, 1969WiZX, 1960Wo03. For predictions on the features of delayed-neutron emission see 1982Ru01.
287.20# *20*	2$^+$	0.20 ns *3*	AB	μ=+0.84 *26* (2009Go09) $T_{1/2}$: Deduced by evaluators using B(E2)↑=0.69 *10* measured in Coulomb excitation (2007Kr19). Other: 0.34 ns *+12−7* reported for 205γ from ^{254}Cf SF decay and tentatively assigned to 2$^+$ level in ^{142}Xe (1980ChZM); however, 205γ in ^{142}Xe was not seen in any other work.
690.7# *3*	(4$^+$)		A	Jπ: possible band member and systematics.
1181.1# *4*	(6$^+$)		A	Jπ: possible band member and systematics.
1258.5@ *11*	(3$^-$)		A	Jπ: possible band member.
1516.3@ *11*	(5$^-$)		A	Jπ: possible band member.
1622.4 *5*			A	
1732.2# *4*	(8$^+$)		A	Jπ: possible band member and systematics.
1864.5 *8*			A	
1888.3@ *9*	(7$^-$)		A	Jπ: ΔJ=1 to 6$^+$; band assignment.
1981.2 *6*			A	
2211.7 *7*			A	
2342.6# *5*	(10$^+$)		A	Jπ: possible band member and systematics.
2351.2@ *7*	(9$^-$)		A	Jπ: E1 to (8$^+$); band assignment.
2605.3 *6*			A	
2805.9& *9*			A	
2891.7@ *9*	(11$^-$)		A	Jπ: stretched quadrupole to (9$^-$); band assignment.
3014.3# *7*	(12$^+$)		A	
3210.4& *14*			A	
3496.2@ *14*	(13$^-$)		A	Jπ: Band assignment.
3739.7# *12*	(14$^+$)		A	
3764.3& *17*			A	
4511.2# *16*	(16$^+$)		A	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{142}Xe Levels (continued)

† From $\gamma\gamma$ angular correlations (consistent with stretched E2), linear polarization and systematics of collective bands in neighboring even-even nuclei, except where noted.
‡ From least-squares fit to Eγ.
# Band(A): g.s. band.
@ Band(B): octupole band.
& Band(C): possible rotational band.

$\gamma(^{142}Xe)$

All data are from ^{248}Cm SF decay.

E$_i$(level)	J$_i^\pi$	E$_\gamma$	I$_\gamma$	E$_f$	J$_f^\pi$	Mult.	α†	Comments
287.20	2^+	287.2 *2*	100	0.0	0^+			
690.7	(4^+)	403.5 *2*	100	287.20	2^+			
1181.1	(6^+)	490.4 *2*	100	690.7	(4^+)			
1258.5	(3^-)	971.3	100	287.20	2^+			
1516.3	(5^-)	825.6	100	690.7	(4^+)			
1622.4		441.1		1181.1	(6^+)			
		931.7 *5*		690.7	(4^+)			
1732.2	(8^+)	551.1 *2*	100	1181.1	(6^+)			
1864.5		683.4	100	1181.1	(6^+)			
1888.3	(7^-)	372‡		1516.3	(5^-)			
		707.2		1181.1	(6^+)	D		
1981.2		116.7	28 *3*	1864.5				
		358.9	38 *3*	1622.4				
		800.1 *5*	100 *5*	1181.1	(6^+)			
2211.7		230.4		1981.2				
		347.2		1864.5				
		479.5		1732.2	(8^+)			
2342.6	(10^+)	610.4 *2*	100	1732.2	(8^+)			
2351.2	(9^-)	462.9	19 *2*	1888.3	(7^-)			
		618.9	100 *1*	1732.2	(8^+)	E1	0.00182 *3*	α(K)=0.001577 *22*; α(L)=0.000194 *3*; α(M)=3.90×10^{-5} *6*; α(N+..)=9.06×10^{-6} *13* α(N)=8.06×10^{-6} *12*; α(O)=1.004×10^{-6} *14*
2605.3		254.0	22 *6*	2351.2	(9^-)			
		393.4	32 *6*	2211.7				
		873.1 *5*	100 *8*	1732.2	(8^+)			
2805.9		200.6		2605.3				
		454.8		2351.2	(9^-)			
2891.7	(11^-)	540.5		2351.2	(9^-)	(E2)	0.00725 *11*	α(K)=0.00615 *9*; α(L)=0.000876 *13*; α(M)=0.000179 *3*; α(N+..)=4.11×10^{-5} *6* α(N)=3.67×10^{-5} *6*; α(O)=4.42×10^{-6} *7*
		549.1		2342.6	(10^+)			
3014.3	(12^+)	671.7 *5*	100	2342.6	(10^+)			
3210.4		404.5	100	2805.9				
3496.2	(13^-)	481.6‡		3014.3	(12^+)			
		604.5		2891.7	(11^-)			
3739.7	(14^+)	725.4	100	3014.3	(12^+)			
3764.3		553.9		3210.4				
4511.2	(16^+)	771.5		3739.7	(14^+)			

† Additional information 1.
‡ Placement of transition in the level scheme is uncertain.

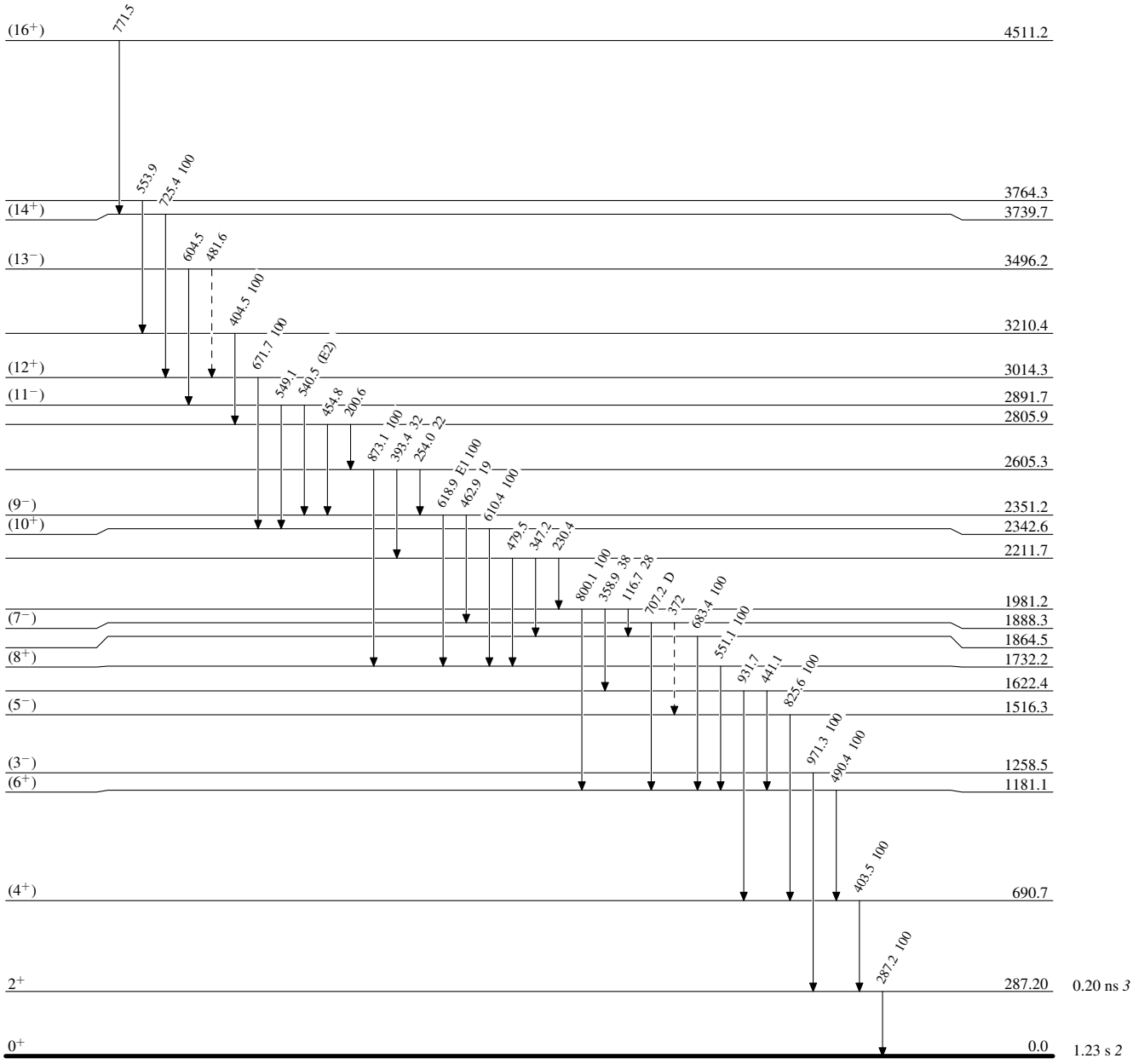
Adopted Levels, Gammas

Legend

Level Scheme

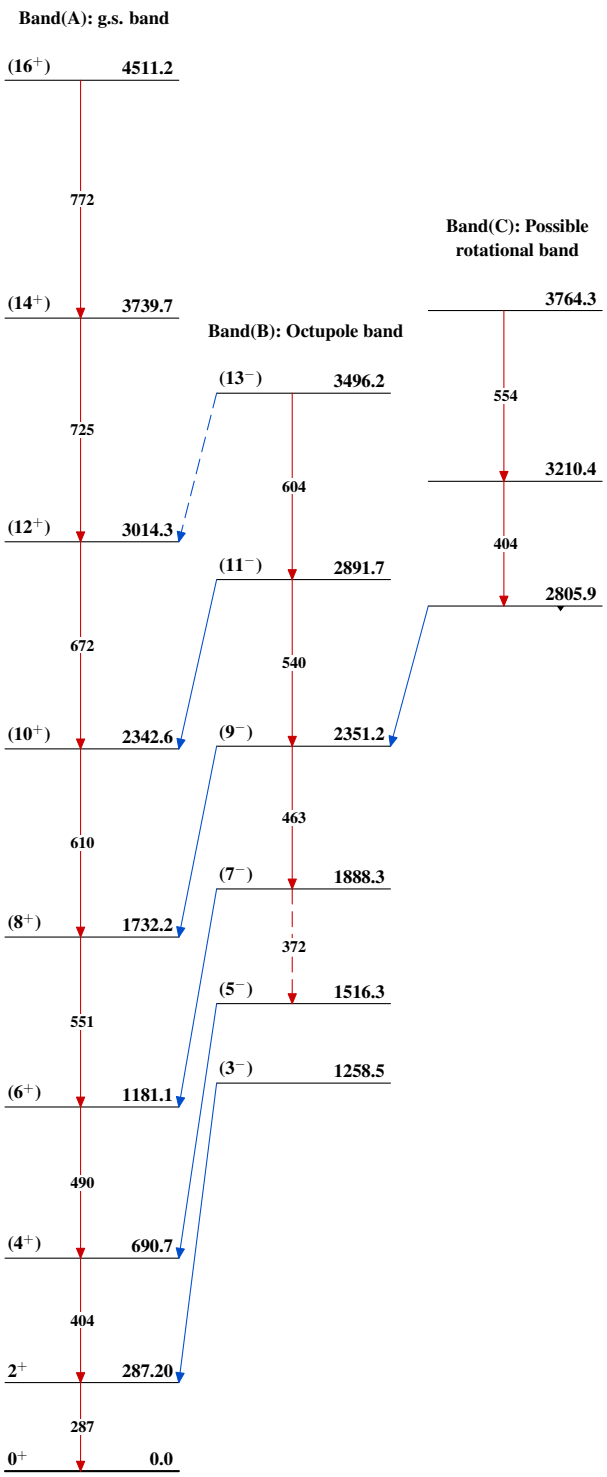
Intensities: Relative photon branching from each level

- - - - - - ► γ Decay (Uncertain)



$^{142}_{54}Xe_{88}$

Adopted Levels, Gammas



$^{142}_{54}Xe_{88}$