Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	ENSDF	21-Feb-2008

$Q(\beta^-)=-8.00\times10^3$ *syst*; $S(n)=1.06\times10^4$ *syst*; $S(p)=-270$ *16*; $Q(\alpha)=3.4\times10^3$ *8* 2012Wa38

Note: Current evaluation has used the following Q record −7699 syst 10990 syst −271 16 *2860* syst 2003Au03,2008Ra03.

$Q(\beta^-)$: from mass excess of −36910 *400* (syst,2003Au03) for ^{144}Er and measured mass excess of −44609.5 *90* (2008Ra03).

S(p) from measured masses (2008Ra03). 2003Au03 give 160 *360* from systematics.

$\Delta Q(\beta^-)$=400, ΔS(n)=500 keV, $\Delta Q(\alpha)$=850 keV (2003Au03).

$Q(\varepsilon p)$=7950 *300* (2003Au03).

Theory: 1999La23.

Produced by ^{92}Mo(^{58}Ni,3p3n), E=325 MeV (1986Wi15). Identification using OASIS mass separator, β-delayed protons in coincidence with Dy K x-rays.

Mass measurement by Penning-trap spectrometer: 2008Ra03 (also 2007Ra37).

^{144}Ho Levels

Cross Reference (XREF) Flags

A ^{144}Ho IT decay (506 ns)
B ^{92}Mo(^{54}Fe,pnγ)

E(level)	J^{π}†	$T_{1/2}$	XREF	Comments
0.0	(5⁻)	0.7 s *1*	AB	$\%\varepsilon+\%\beta^+=100$; $\%\varepsilon p$=? $T_{1/2}$: from timing of delayed protons (1986Wi15). Configuration=$[\pi h_{11/2}\otimes\nu s_{1/2}]+[\pi h_{11/2}\otimes\nu d_{3/2}]$.
60.6 *2*	(6⁻)		AB	J^{π}: M1+E2 γ to (5⁻).
208.9 *2*	(7⁻)		AB	J^{π}: E2 γ to (5⁻), M1+E2 γ to (6⁻).
265.3 *3*	(8⁺)	506 ns *20*	AB	%IT=100 J^{π}: E1 γ to (7⁻); probable configuration=$\pi h_{11/2}\otimes\nu h_{11/2}$. $T_{1/2}$: from γ(t): weighted average of 564 ns *60* (2006Ta08) and 500 ns *20* (2001Sc09).
612.8# *4*	(9⁺)		B	
911.9‡ *5*	(10⁺)		B	
1274.9# *5*	(11⁺)		B	
1413.3‡ *5*	(12⁺)		B	
1842.6# *5*	(13⁺)		B	
2136.8‡ *6*	(14⁺)		B	
2604.6# *7*	(15⁺)		B	
2992.8‡ *7*	(16⁺)		B	
3473.1# *7*	(17⁺)		B	
3878.0‡ *8*	(18⁺)		B	
4691.1‡ *10*	(20⁺)		B	

† For high-spin (J>8) levels, assignments are tentative and are based on assumed configuration and band structures.

‡ Band(A): Band based on (10⁺). Possible configuration=$\pi h_{11/2}\otimes\nu(h_{11/2},f_{7/2})$ or $\pi h_{11/2}\otimes\nu(s_{1/2},d_{3/2})$.

Band(a): Band based on (9⁺). Possible configuration=$\pi h_{11/2}\otimes\nu(h_{11/2},f_{7/2})$ or $\pi h_{11/2}\otimes\nu(s_{1/2},d_{3/2})$.

Adopted Levels, Gammas (continued)

γ(^{144}Ho)

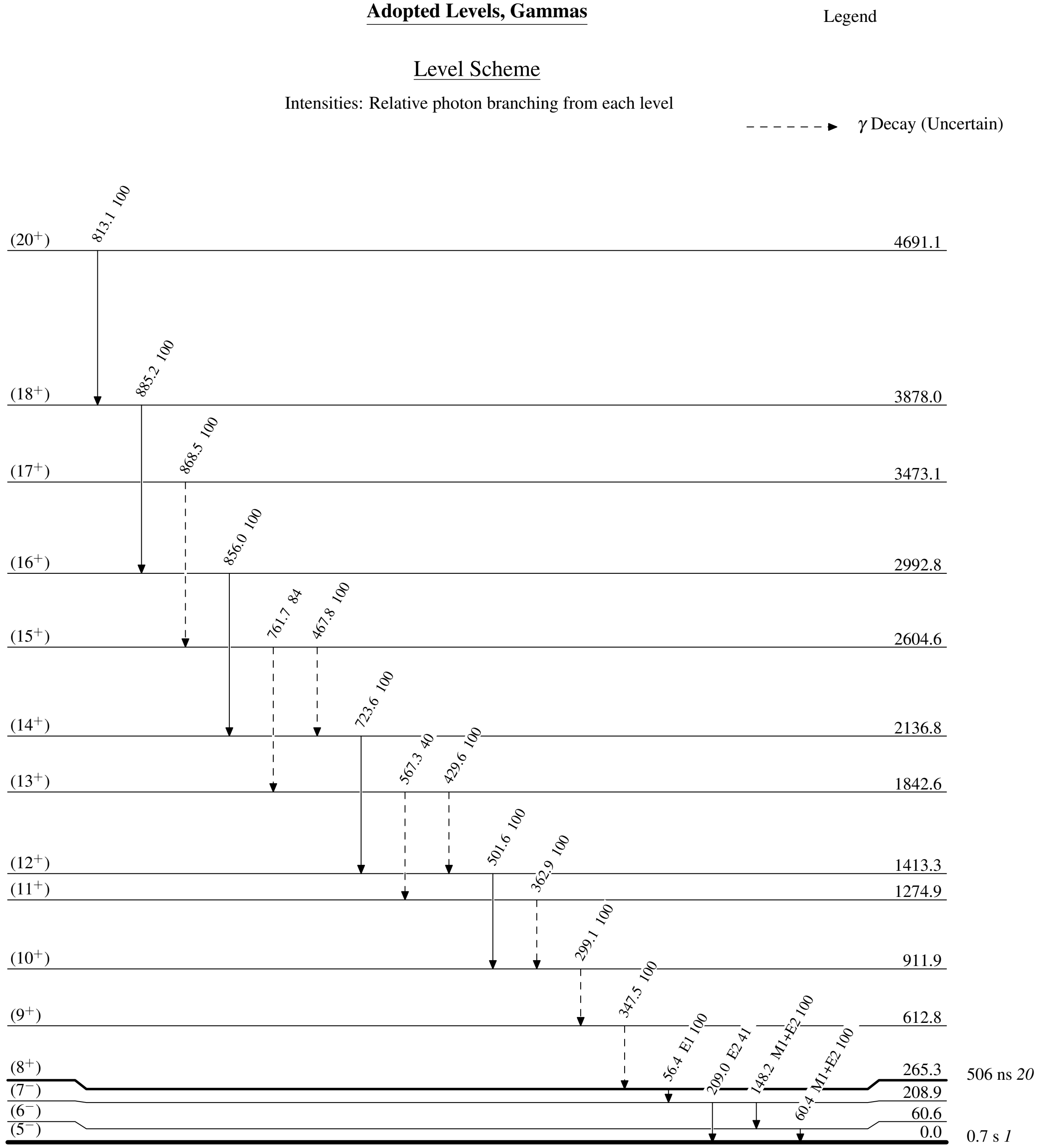
E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.‡	α#	Comments
60.6	(6⁻)	60.4 *3*	100	0.0	(5⁻)	M1+E2	17 *6*	ce(K)/(γ+ce)=0.34 *16*; ce(L)/(γ+ce)=0.5 *6*; ce(M)/(γ+ce)=0.11 *9*; ce(N+)/(γ+ce)=0.028 *25* ce(N)/(γ+ce)=0.025 *22*; ce(O)/(γ+ce)=0.003 *3*; ce(P)/(γ+ce)=2.1×10^{-5} *15*
208.9	(7⁻)	148.2 *2*	100 *18*	60.6	(6⁻)	M1+E2	0.77 *9*	ce(K)/(γ+ce)=0.31 *7*; ce(L)/(γ+ce)=0.09 *4*; ce(M)/(γ+ce)=0.022 *9*; ce(N+)/(γ+ce)=0.0057 *22* ce(N)/(γ+ce)=0.0050 *20*; ce(O)/(γ+ce)=0.00065 *21*; ce(P)/(γ+ce)=1.7×10^{-5} *8*
		209.0 *2*	41 *11*	0.0	(5⁻)	E2	0.211	ce(K)/(γ+ce)=0.1166 *16*; ce(L)/(γ+ce)=0.0445 *7*; ce(M)/(γ+ce)=0.01050 *16*; ce(N+)/(γ+ce)=0.00269 *5* ce(N)/(γ+ce)=0.00238 *4*; ce(O)/(γ+ce)=0.000299 *5*; ce(P)/(γ+ce)=5.58×10^{-6} *9*
265.3	(8⁺)	56.4 *2*	100	208.9	(7⁻)	E1	1.37	α for 56.7. This Eγ is too close to K-shell binding energy, thus it is difficult to obtain a reliable α value.
612.8	(9⁺)	347.5@ *2*	100	265.3	(8⁺)			
911.9	(10⁺)	299.1@ *3*	100	612.8	(9⁺)			
1274.9	(11⁺)	362.9@ *1*	100	911.9	(10⁺)			
1413.3	(12⁺)	501.6 *2*	100	911.9	(10⁺)			
1842.6	(13⁺)	429.6@ *3*	100 *8*	1413.3	(12⁺)			
		567.3@ *3*	40 *20*	1274.9	(11⁺)			
2136.8	(14⁺)	723.6 *4*	100	1413.3	(12⁺)			
2604.6	(15⁺)	467.8@ *2*	100 *11*	2136.8	(14⁺)			
		761.7@ *8*	84 *16*	1842.6	(13⁺)			
2992.8	(16⁺)	856.0 *2*	100	2136.8	(14⁺)			
3473.1	(17⁺)	868.5@ *3*	100	2604.6	(15⁺)			
3878.0	(18⁺)	885.2 *5*	100	2992.8	(16⁺)			
4691.1	(20⁺)	813.1 *6*	100	3878.0	(18⁺)			

† From ^{92}Mo(^{54}Fe,pnγ).
‡ From ^{144}Ho IT decay (506 ns).
# 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.
@ Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

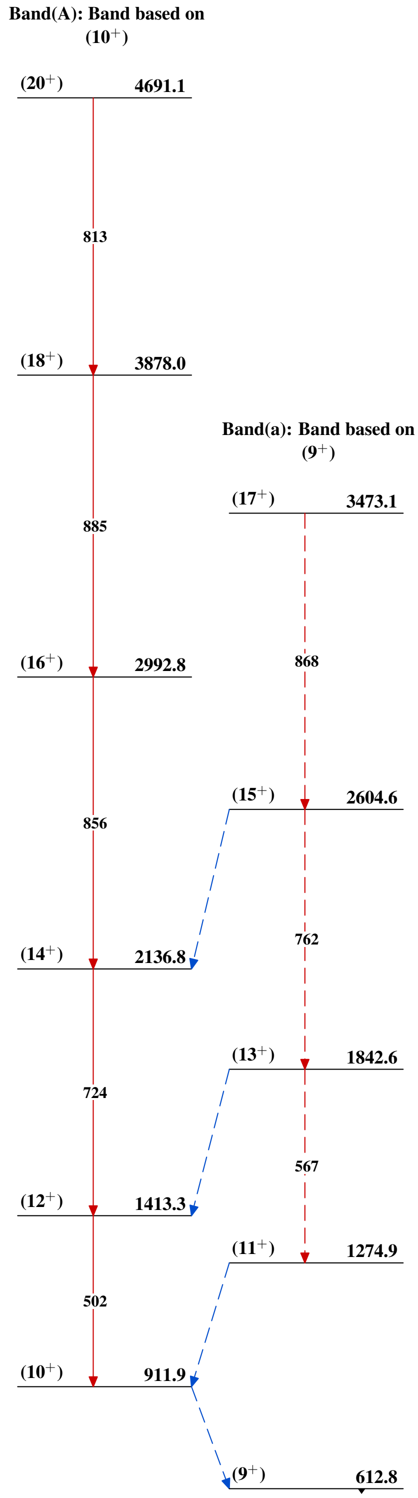
Level Scheme

Intensities: Relative photon branching from each level



$^{144}_{67}Ho_{77}$

Adopted Levels, Gammas



$^{144}_{67}Ho_{77}$