Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 110,507 (2009)	1-Oct-2008

Q(β^-)=1806 *7*; S(n)=6947 *8*; S(p)=6483 *8*; Q(α)=884 *9* 2012Wa38
Note: Current evaluation has used the following Q record 1805 76948 76484 8881 8 2003Au03.
Additional information 1.

^{145}Pr Levels

Cross Reference (XREF) Flags

A ^{145}Ce β^- decay
B ^{146}Nd(d,^{3}He) E=50 MeV
C ^{252}Cf SF decay

E(level)†	J$^\pi$	T$_{1/2}$	XREF	Comments
0.0	7/2$^+$	5.984 h *10*	ABC	%β^-=100 J$^\pi$: L=4 in (d,^{3}He) for the g.s. and 2 for 62 level with a connecting M1 transition establish J^π(g.s.)=7/2$^+$ and J^π(62)=5/2$^+$. T$_{1/2}$: from 1980Ge11. Others: 5.98 h *2* (1964Ho03), 5.95 h *7* (1954Ma07), 5.88 h *10* (1960Al33).
62.65 *1*	5/2$^+$	4.0 ns *16*	ABC	T$_{1/2}$: from ^{252}Cf SF decay (1974ClZX). J$^\pi$: see comment for J^π(g.s.).
188.84 *1*	(3/2)$^+$		AB	J$^\pi$: L=2, small σ in (d,^{3}He) suggests low proton occupancy and therefore favors 3/2$^+$ and not 5/2$^+$ (d5/2).
347.18 *1*	3/2$^+$		Ab	J$^\pi$: M1 γ to 5/2$^+$, $\gamma\gamma(\theta)$.
350.9 *3*	5/2$^+$		Ab	J$^\pi$: from $\gamma\gamma(\theta)$ J(350.9)=J(62.6); M1,E2 γ to 7/2$^+$.
540.09 *2*			A	
550	7/2$^+$,9/2$^+$		B	J$^\pi$: L=4 in (d,^{3}He).
554.81 *1*	3/2$^+$		A	J$^\pi$: γ to 7/2$^+$, $\gamma\gamma(\theta)$ data.
697.20 *4*			A	
766.31 *3*			AB	
786.91 *1*	(3/2)$^-$		A	J$^\pi$: γ to 5/2$^+$ is E1, log *ft*=4.94 from ^{145}Ce g.s. is compatible only with configuration=(π 5/2[532]) for 787.3 level in ^{145}Pr and configuration=(ν 3/2[532]) for ^{145}Ce g.s.
806.43 *4*	(3/2)$^+$		AB	J$^\pi$: L=2 in (d,^{3}He), no γ to 7/2$^+$.
835.64 *5*			A	
845.93 *2*			A	
859.43 *4*			A	
948.4 *1*			A	Logft=7.5 in ^{145}Ce β^- decay from J^π=(3/2)$^-$ suggests possible spin/parity values of 1/2$^+$,3/2$^+$, or 5/2$^+$.
960	(7/2$^+$)		B	J$^\pi$: L=(4) in (d,^{3}He).
1046.97 *4*			A	
1110.56 *3*	(5/2)$^+$		AB	J$^\pi$: L=2 in (d,^{3}He), intense γ ray to 7/2$^+$. E(level): 1090 in (d,^{3}He) (1981VaZJ); 1084 in (d,^{3}He) (1978SaZP).
1210.54 *2*	5/2$^-$		A	J$^\pi$: M1 γ to π=−. γ rays to 3/2$^+$ and 7/2$^+$ γ to 7/2$^+$ g.s.
1244			B	
1318.4 *1*			A	
1330.1 *1*			AB	
1493			B	
1560.46 *5*			A	
1608.8 *1*			A	

† Deduced by evaluators from least-squares fit to γ-ray energies for levels populated in 145Ce β^- decay.

Adopted Levels, Gammas (continued)

$\gamma(^{145}Pr)$

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Mult.	α‡	Comments
62.65	$5/2^+$	62.54 *2*	100	0.0	$7/2^+$	M1	5.02	α(K)=4.27 *6*; α(L)=0.593 *9*; α(M)=0.1250 *18*; α(N+..)=0.0328 *5* α(N)=0.0279 *4*; α(O)=0.00449 *7*; α(P)=0.000328 *5* B(M1)(W.u.)=0.0037 *15*
188.84	$(3/2)^+$	126.07 *2*	77 *2*	62.65	$5/2^+$			
		188.85 *1*	100 *3*	0.0	$7/2^+$			
347.18	$3/2^+$	158.5 *3*	0.36 *7*	188.84	$(3/2)^+$			
		284.53 *1*	100 *1*	62.65	$5/2^+$	M1	0.0722	α(K)=0.0617 *9*; α(L)=0.00831 *12*; α(M)=0.001749 *25*; α(N+..)=0.000459 *7* α(N)=0.000391 *6*; α(O)=6.31×10^{-5} *9*; α(P)=4.69×10^{-6} *7*
		347.17 *1*	9.5 *1*	0.0	$7/2^+$			
350.9	$5/2^+$	288.4 *1*	4.9 *5*	62.65	$5/2^+$			
		350.9	100 *1*	0.0	$7/2^+$	M1,E2	0.036 *6*	α(K)=0.030 *6*; α(L)=0.00471 *9*; α(M)=0.001004 *15*; α(N+..)=0.000260 *5* α(N)=0.000223 *4*; α(O)=3.49×10^{-5} *14*; α(P)=2.2×10^{-6} *5*
540.09		189.2 *3*	22.7 *7*	350.9	$5/2^+$			
		193.01 *7*	12.3 *13*	347.18	$3/2^+$			
		350.9	100 *1*	188.84	$(3/2)^+$			
		477.2 *1*	5.8 *7*	62.65	$5/2^+$			
		540.36 *5*	44 *1*	0.0	$7/2^+$			
554.81	$3/2^+$	204.07	72.4 *8*	350.9	$5/2^+$			
		207.61	174 *2*	347.18	$3/2^+$			
		365.8	52.0 *12*	188.84	$(3/2)^+$			
		492.21 *3*	100 *4*	62.65	$5/2^+$			
		554.83 *3*	25.6 *4*	0.0	$7/2^+$			
697.20		349		347.18	$3/2^+$			
		507.4 *2*	13 *5*	188.84	$(3/2)^+$			
		634.54 *6*	100 *3*	62.65	$5/2^+$			
766.31		211.46 *3*	100	554.81	$3/2^+$			
786.91	$(3/2)^-$	232.08 *1*	3.45 *6*	554.81	$3/2^+$			
		246.88 *3*	0.24 *1*	540.09				
		435.99 *4*	2.04 *4*	350.9	$5/2^+$			
		439.71 *4*	11.4 *2*	347.18	$3/2^+$			
		597.9 *1*	0.66 *5*	188.84	$(3/2)^+$			
		724.33 *3*	100.0	62.65	$5/2^+$	E1	1.68×10^{-3}	α(K)=0.001447 *21*; α(L)=0.000184 *3*; α(M)=3.84×10^{-5} *6*; α(N+..)=1.004×10^{-5} *14* α(N)=8.56×10^{-6} *12*; α(O)=1.376×10^{-6} *20*; α(P)=1.011×10^{-7} *15*
806.43	$(3/2)^+$	743.76 *4*	100	62.65	$5/2^+$			
835.64		773.19 *6*	100 *16*	62.65	$5/2^+$			
		835.0 *1*	13 *3*	0.0	$7/2^+$			
845.93		498.97 *3*	15.1 *3*	347.18	$3/2^+$			
		657.2 *1*	10 *3*	188.84	$(3/2)^+$			
		783.09 *3*	100 *2*	62.65	$5/2^+$			
		845.88 *5*	12.8 *3*	0.0	$7/2^+$			
859.43		304.66 *7*	11.4 *7*	554.81	$3/2^+$			
		319.4 *1*	3.6 *7*	540.09				
		512.21 *7*	100 *21*	347.18	$3/2^+$			

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

γ(^{145}Pr) (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Mult.	α‡	Comments
859.43		670.6 *1*	6 *3*	188.84	$(3/2)^+$			
948.4		885.5 *1*	100 *7*	62.65	$5/2^+$			
		948.6 *1*	53 *7*	0.0	$7/2^+$			
1046.97		507.3 *2*	50 *10*	540.09				
		695.93 *6*	57 *3*	350.9	$5/2^+$			
		858.11 *6*	100 *33*	188.84	$(3/2)^+$			
		1047.07 *6*	53 *3*	0.0	$7/2^+$			
1110.56	$(5/2)^+$	759.74 *5*	13.6 *5*	350.9	$5/2^+$			
		763.24 *6*	3.3 *12*	347.18	$3/2^+$			
		921.44 *6*	6.0 *2*	188.84	$(3/2)^+$			
		1110.68 *4*	100 *2*	0.0	$7/2^+$			
1210.54	$5/2^-$	350.94	9.8 *1*	859.43				
		364.6 *1*	0.39 *6*	845.93				
		423.60 *3*	42 *1*	786.91	$(3/2)^-$	M1	0.0257	α(K)=0.0220 *3*; α(L)=0.00292 *4*; α(M)=0.000614 *9*; α(N+..)=0.0001612 *23* α(N)=0.0001373 *20*; α(O)=2.22×10^{-5} *4*; α(P)=1.660×10^{-6} *24*
		444.04 *7*		766.31				
		512.61 *8*	1.9 *7*	697.20				
		655.95 *7*	10.3 *7*	554.81	$3/2^+$			
		670.6 *1*	5.2 *7*	540.09				
		859.61 *6*	18 *1*	350.9	$5/2^+$			
		863.31 *6*	2.6 *1*	347.18	$3/2^+$			
		1148.03 *4*	100 *1*	62.65	$5/2^+$			
		1210.63 *4*	10.3 *6*	0.0	$7/2^+$			
1318.4		472.8 *1*	40 *10*	845.93				
		482.5 *1*	100 *10*	835.64				
1330.1		524.8 *4*	13 *7*	806.43	$(3/2)^+$			
		979.17 *6*	100 *7*	350.9	$5/2^+$			
1560.46		701.4 *2*	17 *8*	859.43				
		714.3 *5*	33 *17*	845.93				
		863.6 *1*	17 *8*	697.20				
		1371.1 *1*	100 *8*	188.84	$(3/2)^+$			
		1497.7 *1*	67 *8*	62.65	$5/2^+$			
		1560.58 *8*	50 *25*	0.0	$7/2^+$			
1608.8		762.7 *2*	15 *8*	845.93				
		773.24 *6*	38 *8*	835.64				
		801.7 *2*	19 *4*	806.43	$(3/2)^+$			
		911.91 *8*	100 *4*	697.20				
		1545.7 *2*	12 *4*	62.65	$5/2^+$			
		1607.1 *2*	8 *4*	0.0	$7/2^+$			

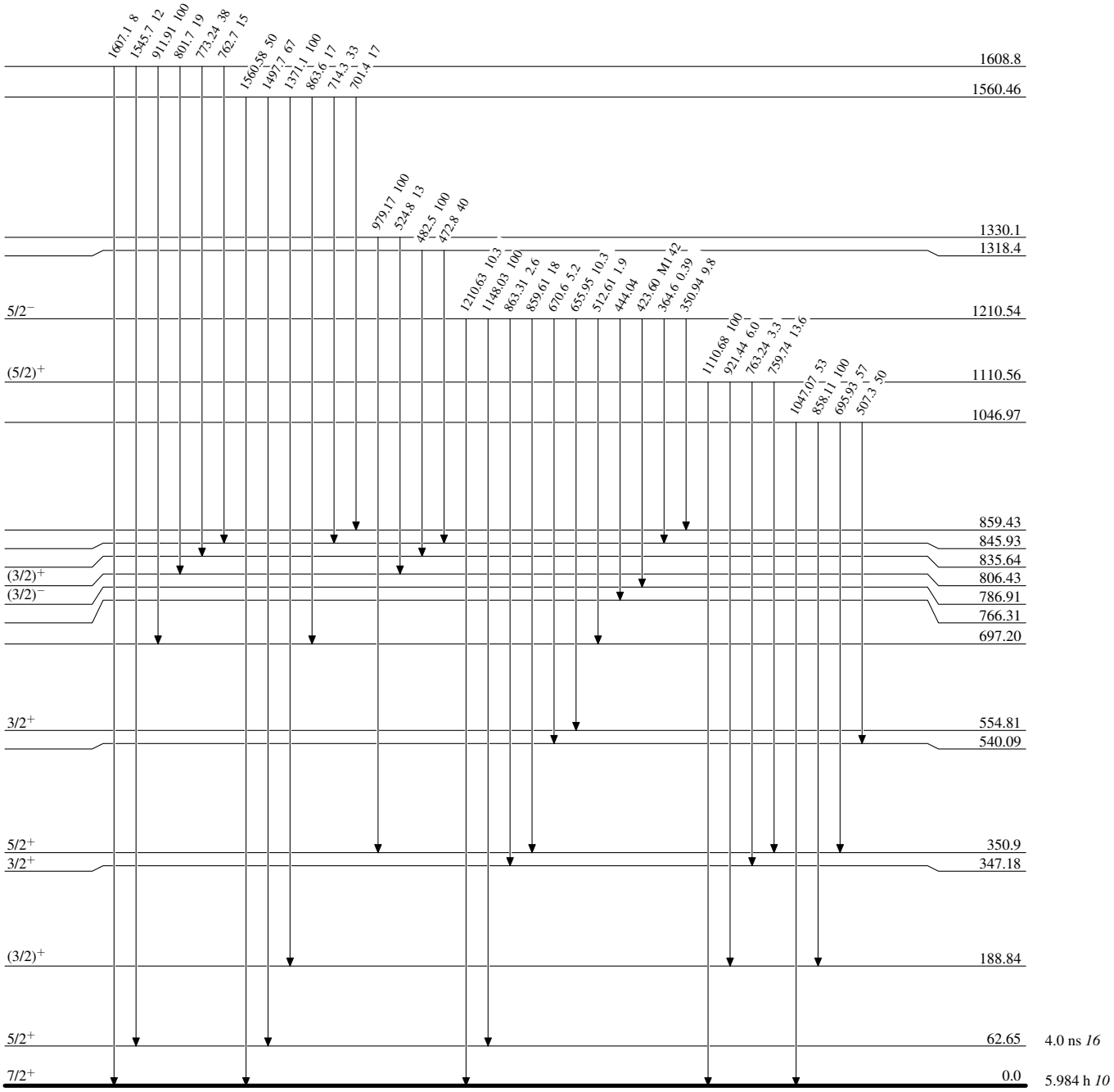
† From ^{145}Ce β^- decay.

‡ 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.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

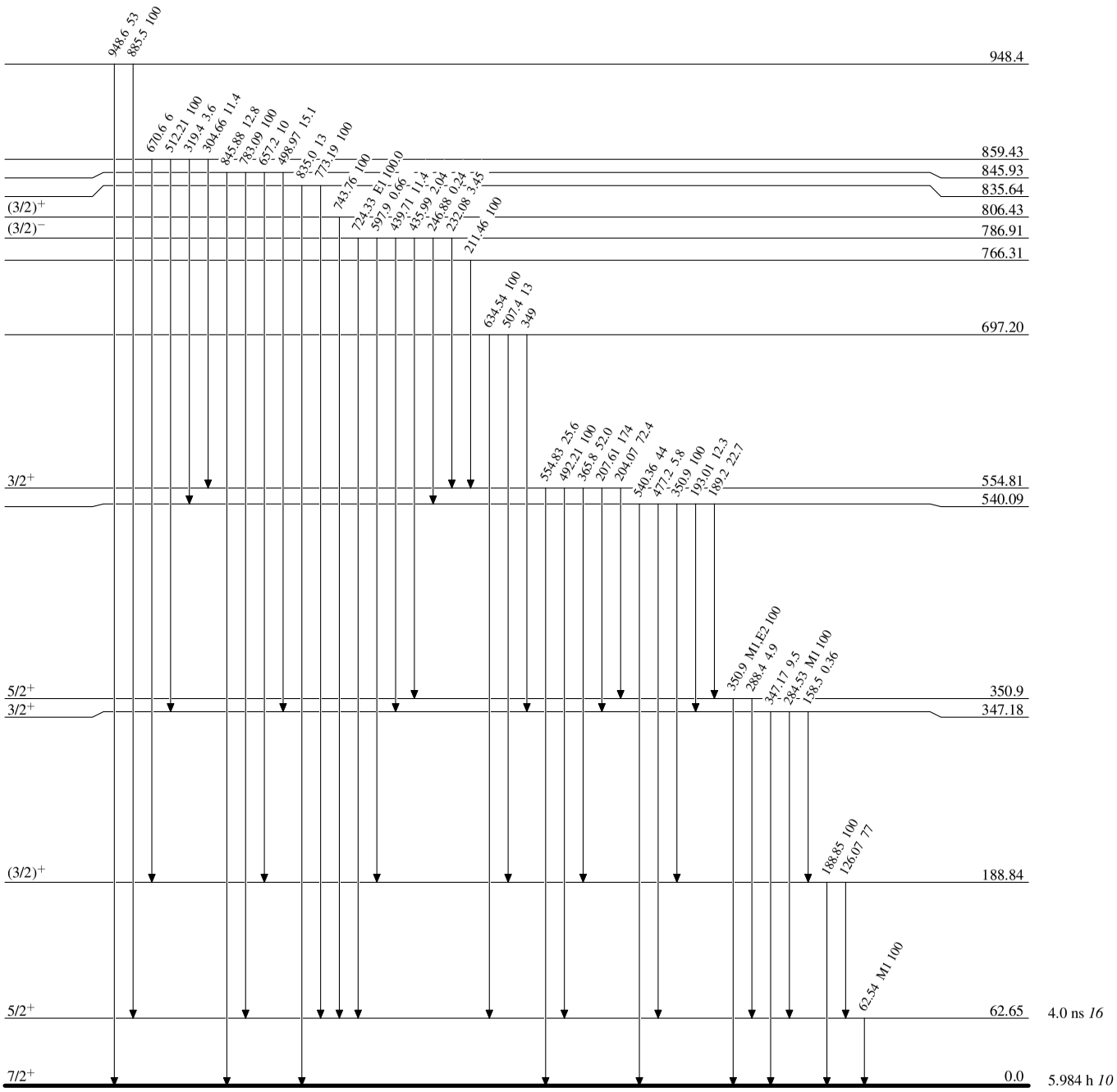


$^{145}_{59}Pr_{86}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{145}_{59}Pr_{86}$