Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 114, 1041 (2013)	1-Mar-2012

Q(β^-)=287 *6*; S(n)=4804 *4*; S(p)=6522 *SY*; Q(α)=6126 *4* 2012Wa38
Estimated ΔS(p)=200 (2012Wa38).

Calculations, compilations:
Favored α decay: 2011Zh36, 1993Bu09, 1992Bu03.
g.s. properties: 1997Mo25, 1995Mo29, 2005Pa73.
Single-particle Nilsson levels: 1994Cw02, 2005Pa73.

1994Cw02 have calculated the following predominant configurations: g.s., 1/2[620]; 20 keV, 3/2[622]; 50 keV, 7/2[613]; 170 keV, 11/2[725]; 430 keV, 9/2[615].
2005Pa73 have calculated the following predominant configurations: g.s., 1/2[620]; 10 keV, 3/2[622]; 100 keV, 11/2[725]; 100 keV, 7/2[613]; 440 keV, 9/2[615].

^{253}Cf Levels

Cross Reference (XREF) Flags

A ^{257}Fm α decay

E(level)[†]	J^π	$T_{1/2}$	XREF	Comments
0.0[‡]	(7/2$^+$)	17.81 d *8*	A	%α=0.31 *4*; %β^-=99.69 *4* (1966Rg01) J^π: allowed or first forbidden non-unique β^- decays to 7/2$^+$ g.s. and (9/2$^+$) excited state in ^{253}Es limits J to 7/2 or 9/2. NILSSON model suggests configuration=(ν 7/2[613]) for N=155. $T_{1/2}$: from 1969DrZZ; other: 17.6 d *2* (1965Me02). Both results were deduced from the growth of ^{253}Es (1965Me02).
61.61[‡] *8*	(9/2$^+$)		A	J^π: M1+E2 γ to (7/2$^+$); band assignment.
136.62[‡] *9*	(11/2$^+$)		A	J^π: (M1) to (9/2$^+$); band assignment.
241.01[#] *8*	(9/2$^+$)		A	J^π: M1+E2 γ to (7/2$^+$) g.s., (M1) γ to (11/2$^+$) level.
321.21[#] *22*	(11/2$^+$)		A	J^π: (M1+E2) γ to (9/2$^+$) level; band assignment.
417[#] *5*	(13/2$^+$)		A	J^π: α decay from (9/2$^+$) ^{257}Fm; band assignment.

† From ^{257}Fm α decay. The band assignments are those proposed by 1967As02 and 1982Ah01.
‡ Band(A): Band 7/2$^+$[613]. A=6.90 keV *5*, B=−1.3 eV *8*, E_0=−108.4 keV *4*. Configuration assignment on the basis of measured level spacing and gK value for the rotational band (1982Ah01).
# Band(B): Band 9/2$^+$[615]. A=7.29 keV *2* (if β=0.0), E_0=60.6 keV *5*. Configuration assignment on the basis of favored alpha decay (1982Ah01).

$\gamma(^{253}$Cf)

All γ data are from ^{257}Fm α decay.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

$\gamma(^{253}Cf)$ (continued)

E_i(level)	J^π_i	E_γ	I_γ	E_f	J^π_f	Mult.	δ	$\alpha^\dagger$	Comments
61.61	(9/2$^+$)	61.6 *1*	100	0.0	(7/2$^+$)	M1+E2	0.27 *2*	47.4 *19*	α(L)=35.1 *14*; α(M)=9.1 *4*; α(N+..)=3.29 *15* α(N)=2.52 *12*; α(O)=0.64 *3*; α(P)=0.117 *5*; α(Q)=0.00503 *9*
136.62	(11/2$^+$)	75.0 *1*	100 *9*	61.61	(9/2$^+$)	(M1)		19.7	α(L)=14.72 *22*; α(M)=3.62 *6*; α(N+..)=1.318 *20* α(N)=1.004 *15*; α(O)=0.261 *4*; α(P)=0.0504 *8*; α(Q)=0.00298 *5*
		136.7 *2*	30 *10*	0.0	(7/2$^+$)				
241.01	(9/2$^+$)	104.4 *1*	5.6 *5*	136.62	(11/2$^+$)	(M1)		7.52	α(L)=5.63 *8*; α(M)=1.386 *20*; α(N+..)=0.504 *8* α(N)=0.384 *6*; α(O)=0.0997 *15*; α(P)=0.0193 *3*; α(Q)=0.001136 *17*
		179.4 *1*	79 *6*	61.61	(9/2$^+$)	M1+E2	0.58 *13*	5.8 *5*	α(K)=4.2 *5*; α(L)=1.182 *17*; α(M)=0.301 *6*; α(N+..)=0.1095 *19* α(N)=0.0839 *15*; α(O)=0.0215 *4*; α(P)=0.00398 *7*; α(Q)=0.000185 *18*
		241.0 *1*	100 *6*	0.0	(7/2$^+$)	M1+E2	1.06 *13*	1.78 *17*	α(K)=1.22 *16*; α(L)=0.419 *14*; α(M)=0.109 *3*; α(N+..)=0.0396 *10* α(N)=0.0304 *8*; α(O)=0.00775 *21*; α(P)=0.00140 *5*; α(Q)=5.4×10^{-5} *7*
321.21	(11/2$^+$)	80.2 *2*	100	241.01	(9/2$^+$)	(M1+E2)		39 *24*	α(L)=29 *17*; α(M)=8 *5*; α(N+..)=2.9 *18* α(N)=2.2 *14*; α(O)=0.6 *4*; α(P)=0.09 *5*; α(Q)=0.0014 *10*
417	(13/2$^+$)	(96 *5*)	100	321.21	(11/2$^+$)	[M1,E2]		18 *10*	α(L)=13 *7*; α(M)=3.6 *21*; α(N+..)=1.3 *8* α(N)=1.0 *6*; α(O)=0.26 *15*; α(P)=0.043 *22*; α(Q)=0.0008 *7*

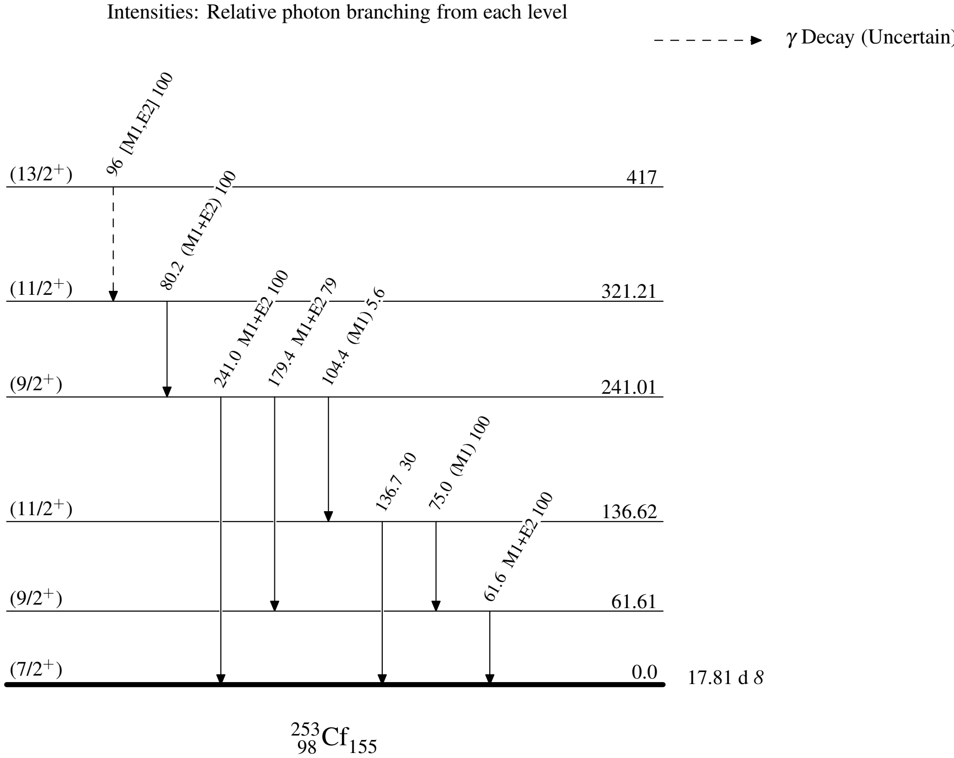
† Additional information 1.

Adopted Levels, Gammas

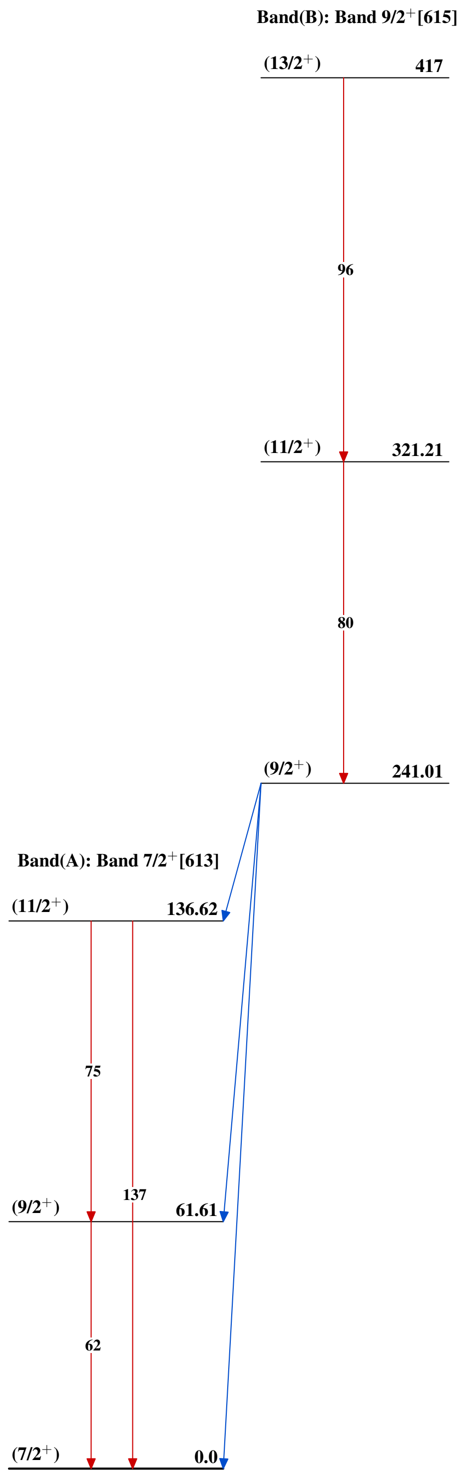
Legend

Level Scheme

Intensities: Relative photon branching from each level



Adopted Levels, Gammas



$^{253}_{98}Cf_{155}$