^{248}Cm,^{252}Cf SF decay 2004Ur01,2000UrZY

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 113, 715 (2012)	31-May-2011

Parent: ^{248}Cm: E=0; $J^\pi=0^+$; $T_{1/2}=3.40\times10^5$ y *4*; %SF decay=8.39 *16*
Measured Eγ, Iγ, γγ, γγ(θ) using EUROGAM2 array.

^{143}Cs Levels

No half-lives longer than 10 ns were measured.
The same levels and γ rays have been reported in ^{252}Cf SF decay (2000UrZY,1995Rz01), unless otherwise specified. Other: 1998Hw04.

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
0#	3/2+	872.6a *4*	11/2−	1558.7b *4*	17/2	2427.7@ *5*	25/2+
76.6@ *3*	5/2+	1072.1& *4*	13/2−	1803.1& *4*	21/2−	2581.1a *6*	
90.3# *3*	7/2+	1155.6a *4*	15/2−	1805.1# *5*	23/2+	2627.1b *6*	
349.1@ *3*	9/2+	1182.3b *4*	13/2	1812.6@ *4*	21/2+	2860.8& *6*	
372.4# *4*	11/2+	1253.9# *4*	19/2+	2032.4a *5*	(23/2−)	3086.8@ *6*	
755.9@ *4*	13/2+	1254.7@ *4*	17/2+	2052.8b *5*	(21/2)	3118.1# *6*	
769.1# *4*	15/2+	1398.0& *4*	17/2−	2294.1& *5*	(25/2−)		
816.6& *4*	9/2−	1549.9a *4*	19/2−	2424.1# *6*	27/2+		

† Deduced by evaluators from least-squares fit to γ-ray energies assuming 0.3 keV uncertainty for each γ ray.
‡ J^π assignments are from 2004Ur01, based on γ-ray multipolarities and rotational-band structure in ^{248}Cm SF Decay.
# Band(A): g.s. rotational band.
@ Band(B): $5/2^+$ rotational band.
& Band(C): $9/2^-$ (octupole) vibrational band.
a Band(D): $11/2^-$ (octupole) vibrational band.
b Band(E): (13/2) band.

γ(^{143}Cs)

Eγ†	Iγ†	Ei(level)	J_i^π	Ef	J_f^π	Mult.‡	Comments
76.5	31 *2*	76.6	5/2+	0	3/2+	(M1)	A_2=−0.11 *3*; A_4=+0.02 *5* A_2 and A_4 for (76γ)(272γ)(θ).
83.5		1155.6	15/2−	1072.1	13/2−		
90.4	37 *2*	90.3	7/2+	0	3/2+	[E2]	A_2=−0.07 *3*; A_4=−0.01 *4* Mult.: A_2 and A_4 for (90γ)(282γ)(θ) suggest E1,M1. However, multipolarity should be E2 from level scheme.
152	0.6 *2*	1549.9	19/2−	1398.0	17/2−		
255.5	8 *1*	1072.1	13/2−	816.6	9/2−	E2	A_2=+0.10 *2*; A_4=−0.02 *4* A_2 and A_4 for (255γ)(326γ)(θ).
258.8	23 *2*	349.1	9/2+	90.3	7/2+	(M1)	A_2=−0.06 *2*; A_4=+0.06 *3* A_2 and A_4 for (259γ)(407γ)(θ).
272.5	51 *3*	349.1	9/2+	76.6	5/2+	E2	A_2=+0.07 *2*; A_4=−0.02 *4* A_2 and A_4 for (272γ)(407γ)(θ).
282.0	100 *5*	372.4	11/2+	90.3	7/2+		
283.0	7 *1*	1155.6	15/2−	872.6	11/2−	E2	A_2=+0.10 *4*; A_4=0.00 *5* A_2 and A_4 for (283γ)(394γ)(θ).

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^{248}Cm,^{252}Cf SF decay 2004Ur01,2000UrZY (continued)

$\gamma(^{143}Cs)$ (continued)

E_γ †	I_γ †	E_i(level)	J_i^π	E_f	J_f^π	Mult. ‡	Comments
295.0	1.9 *3*	1549.9	19/2$^-$	1254.7	17/2$^+$		
325.9	3.1 *4*	1398.0	17/2$^-$	1072.1	13/2$^-$	E2	A_2=+0.06 *3*; A_4=−0.04 *4* A_2 and A_4 for (326γ)(405γ)(θ).
376.5	4 *1*	1558.7	17/2	1182.3	13/2		
383.6	7.7 *8*	755.9	13/2$^+$	372.4	11/2$^+$	M1+E2	A_2=−0.06 *2*; A_4=+0.06 *4* A_2 and A_4 for (384γ)(282γ)(θ). POL=−0.09 *4*.
394.4	18 *2*	1549.9	19/2$^-$	1155.6	15/2$^-$		
396.6	60 *4*	769.1	15/2$^+$	372.4	11/2$^+$	E2	A_2=+0.08 *1*; A_4=−0.03 *2* A_2 and A_4 for (397γ)(282γ)(θ).
399.6	8.0 *7*	1155.6	15/2$^-$	755.9	13/2$^+$	E1	A_2=−0.11 *4*; A_4=+0.03 *6* A_2 and A_4 for (400γ)(summed γ)(θ). POL=+0.08 *3*.
404.9	4.2 *4*	1803.1	21/2$^-$	1398.0	17/2$^-$	(E2)	A_2=−0.10 *4*; A_4=0.00 *4* Additional information 1. A_2 and A_4 for (405γ)(629γ)(θ).
406.8	30 *2*	755.9	13/2$^+$	349.1	9/2$^+$		
482.5	5.5 *6*	2032.4	(23/2$^-$)	1549.9	19/2$^-$		
484.8	35 *3*	1253.9	19/2$^+$	769.1	15/2$^+$	E2	A_2=+0.09 *2*; A_4=+0.01 *1* A_2 and A_4 for (485γ)(summed γ)(θ). POL=+0.12 *3*.
485.5	3.5 *5*	1254.7	17/2$^+$	769.1	15/2$^+$		
489.0		2294.1	(25/2$^-$)	1805.1	23/2$^+$		
490.9	1.5 *5*	2294.1	(25/2$^-$)	1803.1	21/2$^-$		
494.1	2.5 *4*	2052.8	(21/2)	1558.7	17/2		
498.9	15 *2*	1254.7	17/2$^+$	755.9	13/2$^+$	E2	A_2=+0.10 *3*; A_4=0.00 *4* A_2 and A_4 for (499γ)(summed γ)(θ). POL=+0.11 *4*.
500.3	9.2 *9*	872.6	11/2$^-$	372.4	11/2$^+$		
523.5	12 *2*	872.6	11/2$^-$	349.1	9/2$^+$	E1	A_2=−0.08 *1*; A_4=+0.02 *1* A_2 and A_4 for (523γ)(272γ)(θ). POL=+0.14 *8*.
548.7	1.8 *4*	2581.1		2032.4	(23/2$^-$)		
549.3		1803.1	21/2$^-$	1253.9	19/2$^+$		
551.2	14 *1*	1805.1	23/2$^+$	1253.9	19/2$^+$	E2	A_2=+0.10 *3*; A_4=−0.02 *2* A_2 and A_4 for (551γ)(summed γ)(θ). POL=+0.07 *3*.
557.9	5.0 *5*	1812.6	21/2$^+$	1254.7	17/2$^+$	E2	A_2=+0.11 *3*; A_4=+0.02 *5* A_2 and A_4 for (558γ)(summed γ)(θ).
558.7	2.0 *5*	1812.6	21/2$^+$	1253.9	19/2$^+$		
566.7	0.8 *3*	2860.8		2294.1	(25/2$^-$)		
574.3	1.6 *4*	2627.1		2052.8	(21/2)		
615.3	2.0 *3*	2427.7	25/2$^+$	1812.6	21/2$^+$	E2	A_2=+0.10 *3*; A_4=+0.01 *5* A_2 and A_4 for (615γ)(summed γ)(θ).
619.0	4.2 *5*	2424.1	27/2$^+$	1805.1	23/2$^+$	E2	A_2=+0.10 *2*; A_4=−0.04 *3* A_2 and A_4 for (619γ)(summed γ)(θ).
622.5	0.8 *3*	2427.7	25/2$^+$	1805.1	23/2$^+$		
628.8		1398.0	17/2$^-$	769.1	15/2$^+$	E1	A_2=−0.08 *2*; A_4=+0.01 *3* A_2 and A_4 for (629γ)(summed γ)(θ). POL=+0.26 *12*.
659.0	1.1 *2*	3086.8		2427.7	25/2$^+$		
694.0	1.5 *4*	3118.1		2424.1	27/2$^+$		
699.8		1072.1	13/2$^-$	372.4	11/2$^+$		
726.3		816.6	9/2$^-$	90.3	7/2$^+$	(E1)	A_2=−0.12 *5*; A_4=−0.04 *5* A_2 and A_4 for (726γ)(255γ)(θ).
789.7	4.9 *5*	1558.7	17/2	769.1	15/2$^+$	M1,E1	A_2=−0.10 *3*; A_4=+0.01 *4* A_2 and A_4 for (790γ)(summed γ)(θ).

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^{248}Cm,^{252}Cf SF decay 2004Ur01,2000UrZY (continued)

$\gamma(^{143}Cs)$ (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	Comments
798.8	1.0 *2*	2052.8	(21/2)	1253.9	$19/2^+$		Not reported in ^{252}Cf SF decay.
809.9	5.2 *6*	1182.3	13/2	372.4	$11/2^+$	E1,M1	A_2=−0.05 *2*; A_4=−0.02 *4* A_2 and A_4 for (809γ)(282γ)(θ).

† From ^{248}Cm SF Decay (2004Ur01).

‡ From angular correlation and linear polarization coefficients in ^{248}Cm SF Decay, unless otherwise specified. Mult=E2 (since $T_{1/2}$(level) <10 ns) for ΔJ=2; mult=M1,E1 for ΔJ=1 or 0.

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Level Scheme

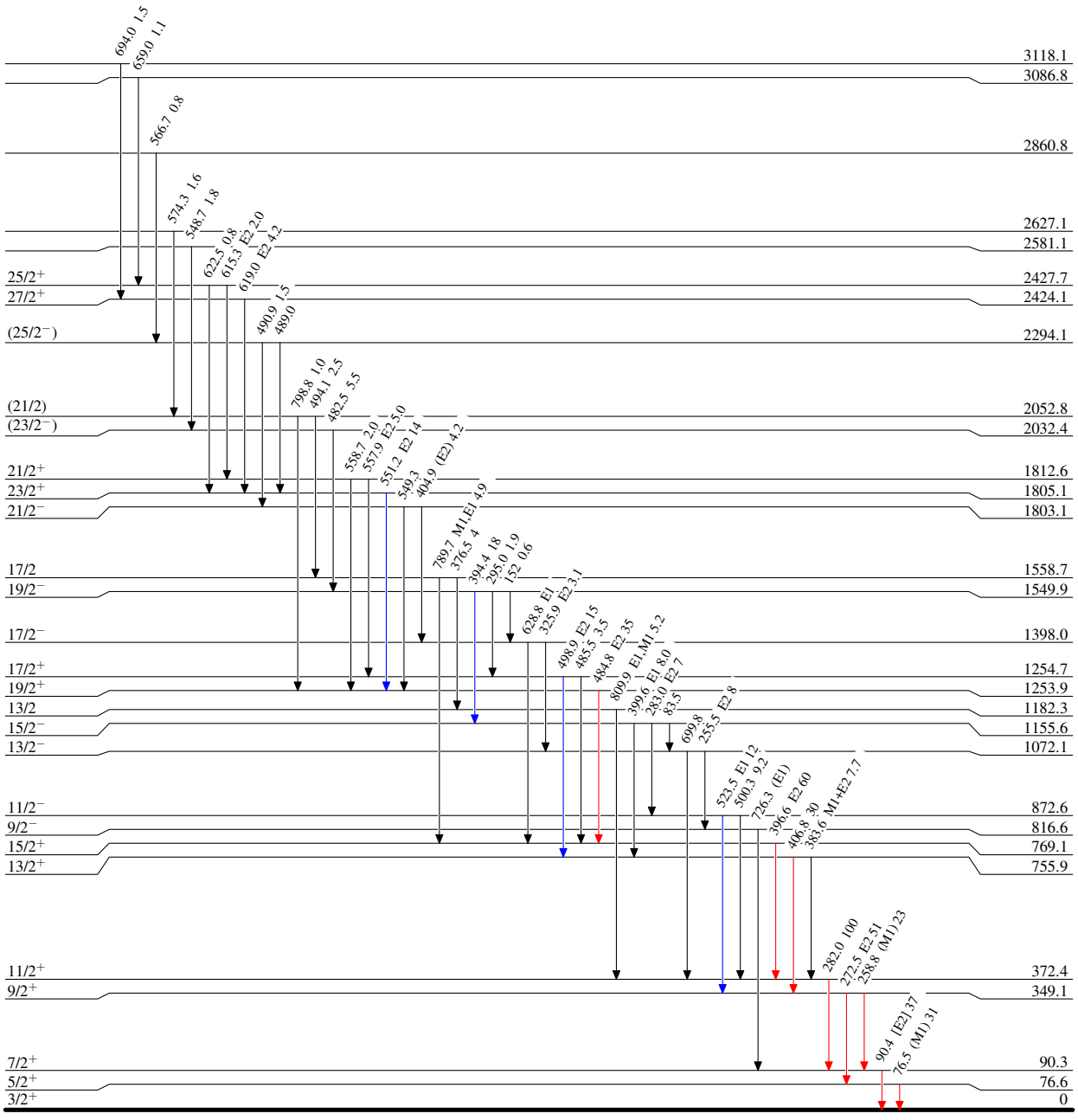
Intensities: Relative I_γ

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

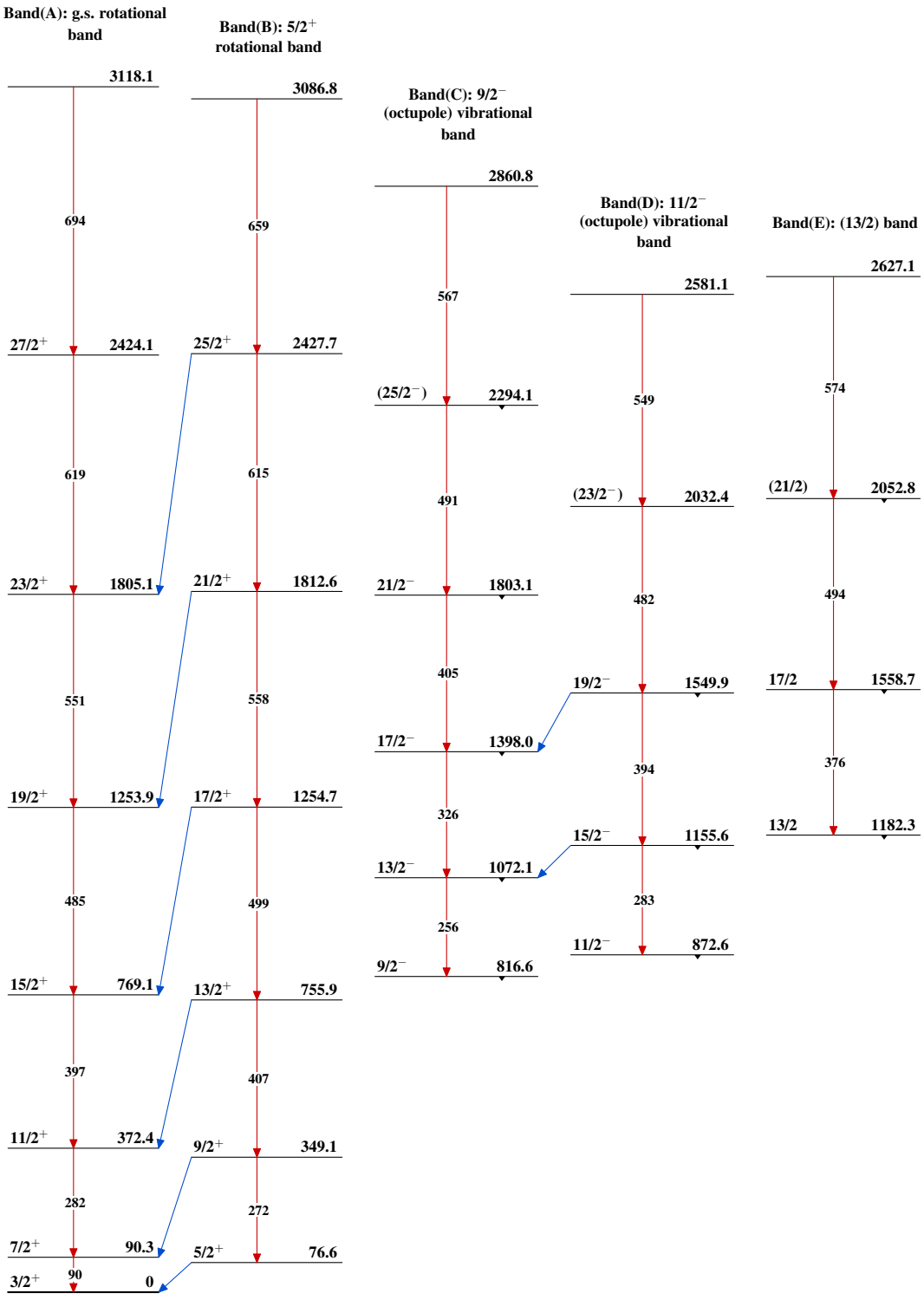
$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$



$^{143}_{55}Cs_{88}$

^{248}Cm,^{252}Cf SF decay 2004Ur01,2000UrZY



$^{143}_{55}Cs_{88}$