^{248}Cm SF decay 2007Rz01

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 146, 1 (2017)	30-Sep-2017

Parent: ^{248}Cm: E=0.0; $J^\pi=0^+$; $T_{1/2}=3.48\times10^5$ y *6*; %SF decay=?

^{248}Cm-$T_{1/2}$: From Adopted Levels of ^{248}Cm.

Also includes ^{239}Pu(n(th),F).

2007Rz01: ^{138}I nuclei were produced via the spontaneous fission of ^{248}Cm for prompt γ-ray measurements and via ^{239}Pu(n(th),F) for delayed γ-ray measurements. Fission fragments were separated by the LOHENGRIN separator at Grenoble. Prompt γ rays were detected with the EUROGAM II array of 52 Compton-suppressed Ge detectors; delayed γ rays were detected with two Si(Li) detectors or a Miniball triple cluster detector and a clover detector. Measured Eγ, Iγ, $\gamma\gamma$-coin, $\gamma\gamma(\theta)$, particle-γ(t). Deduced levels, J, π, γ-ray multipolarities. Comparisons with shell-model calculations.

^{138}I Levels

E(level)[†]	J^π[‡]	$T_{1/2}$	Comments
0?	(1^-)		J^π: from direct β feeding to 0^+ and 2^+ levels in ^{138}Xe and shell-model calculations (2007Rz01).
67.9? *3*	(3^-)	1.26 μs *16*	%IT=100 $T_{1/2}$: from γ(t) (2007Rz01).
186.2 *5*	(4^-)		
222.3 *4*	(4^-)		
229.2 *4*	(5^-)		
297.4 *5*	(6^-)		
362.9[#] *6*	(7^-)		
722.9[#] *6*	(8^-)		
994.1[#] *6*	(9^-)		
1303.7[#] *6*	(10^-)		
1577.3[#] *6*	(11^-)		
1828.6[#] *7*	(12^-)		

[†] From a least-squares fit to γ-ray energies, assuming an uncertainty of 0.3 keV for each γ ray.

[‡] From 2007Rz01, based on deduced γ-ray multipolarities and band structure, unless otherwise noted.

[#] Band(A): $\Delta J=1$, $\pi g_{7/2}\otimes\nu f_{7/2}$.

$\gamma(^{138}I)$

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	Comments
(7)		229.2	(5^-)	222.3	(4^-)		
43.5[@]	10 *5*	229.2	(5^-)	186.2	(4^-)		
65.6	81 *17*	362.9	(7^-)	297.4	(6^-)	M1+E2	Mult.: from α_K(exp)=6.5 *15* (2007Rz01).
67.9[@]		67.9?	(3^-)	0?	(1^-)	E2	Mult.: from K/L=1.56 *20* (2007Rz01).
68.2	100 *18*	297.4	(6^-)	229.2	(5^-)	M1+E2	Mult.: from α_K(exp)=6 *1* (2007Rz01).
118.3	52 *5*	186.2	(4^-)	67.9?	(3^-)		
154.6	65 *8*	222.3	(4^-)	67.9?	(3^-)		
161.1	14 *4*	229.2	(5^-)	67.9?	(3^-)		
251.8	7 *2*	1828.6	(12^-)	1577.3	(11^-)	(M1+E2)	$(252\gamma)(584\gamma)(\theta)$: $A_2=-0.14$ *6*, $A_4=-0.01$ *8* (2007Rz01).
271.4	14 *3*	994.1	(9^-)	722.9	(8^-)	(M1+E2)	$(271\gamma)(360\gamma)(\theta)$: $A_2=+0.09$ *6*, $A_4=-0.01$ *8* (2007Rz01).
273.7	4 *1*	1577.3	(11^-)	1303.7	(10^-)	(M1+E2)[#]	
309.4	8 *2*	1303.7	(10^-)	994.1	(9^-)	(M1+E2)	$(309\gamma)(631\gamma)(\theta)$: $A_2=-0.04$ *6*, $A_4=+0.10$ *9* (2007Rz01).
360.1	39 *5*	722.9	(8^-)	362.9	(7^-)	(M1+E2)	

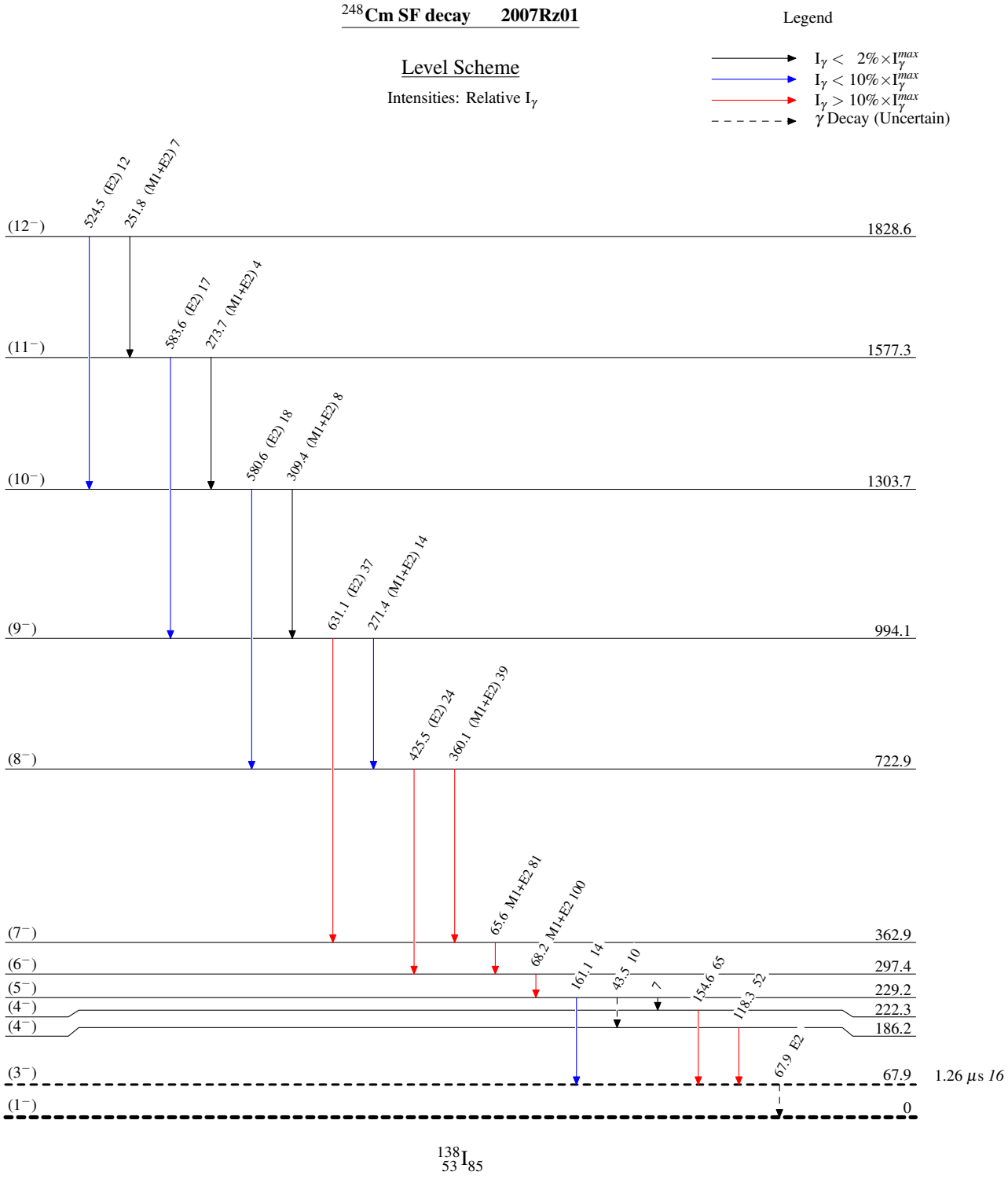
Continued on next page (footnotes at end of table)

^{248}Cm SF decay 2007Rz01 (continued)

$\gamma(^{138}I)$ (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]
425.5	24 *4*	722.9	(8^-)	297.4	(6^-)	(E2)[#]
524.5	12 *3*	1828.6	(12^-)	1303.7	(10^-)	(E2)[#]
580.6	18 *3*	1303.7	(10^-)	722.9	(8^-)	(E2)[#]
583.6	17 *3*	1577.3	(11^-)	994.1	(9^-)	(E2)
631.1	37 *5*	994.1	(9^-)	362.9	(7^-)	(E2)

[†] From 2007Rz01.
[‡] From 2007Rz01 based on band assignments and $\gamma\gamma(\theta)$ data, which are consistent with ΔJ=1 (Mult.=M1+E2) or ΔJ=2 (Mult.=E2), with brackets added by evaluator, unless otherwise noted.
[#] Proposed by 2007Rz01 with brackets added by evaluator. No experimental evidence is provided in 2007Rz01 for these assignments.
[@] Placement of transition in the level scheme is uncertain.


^{248}Cm SF decay 2007Rz01
Level Scheme
Intensities: Relative I_γ
Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$
γ Decay (Uncertain)
(12⁻) 1828.6
(11⁻) 1577.3
(10⁻) 1303.7
(9⁻) 994.1
(8⁻) 722.9
(7⁻) 362.9
(6⁻) 297.4
(5⁻) 229.2
(4⁻) 222.3
(4⁻) 186.2
(3⁻) 67.9 1.26 μs 16
(1⁻) 0
524.5 (E2) 12
251.8 (M1+E2) 7
583.6 (E2) 17
273.7 (M1+E2) 4
580.6 (E2) 18
309.4 (M1+E2) 8
631.1 (E2) 37
271.4 (M1+E2) 14
425.5 (E2) 24
360.1 (M1+E2) 39
65.6 M1+E2 81
68.2 M1+E2 100
161.1 14
43.5 10
7
154.6 65
118.3 52
67.9 E2
$^{138}_{53}I_{85}$

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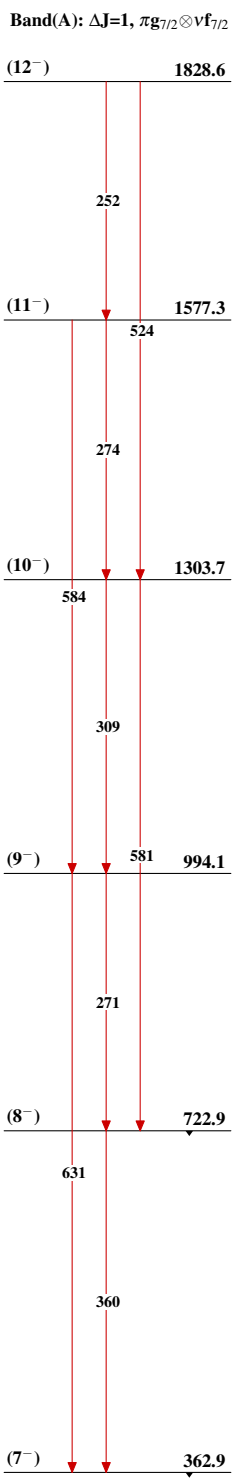

$^{138}_{53}I_{85}$