

²⁵²Cf SF decay 2018Bh07

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 170, 1 (2020)	16-Aug-2020

Parent: ²⁵²Cf: E=0.0; J^π=0⁺; T_{1/2}=2.645 y 8; %SF decay=?

Includes prompt γ-ray study from ⁹Be(²³⁸U,Fγ) reaction.

2018Bh07: combine data from two experiments:

- ²⁵²Cf SF decay: measured E_γ and γγ using GAMMASPHERE array comprised of 101 Compton-suppressed Ge detectors at LBNL facility.
- ⁹Be(²³⁸U,Fγ), E=6.2 MeV/nucleon, measured E_γ, I_γ, Z- and A- gated γγ coincidences with isotopically identified fission fragments using VAMOS++ and EXOGAM array at GANIL facility.

Deduced high-spin level scheme. The statistics were not enough to carry out any angular distribution or polarization measurements for such neutron-rich nuclei.

All data are from 2018Bh07 except where noted otherwise.

¹⁵³Pm Levels

E(level) [†]	J ^π [‡]	E(level) [†]	J ^π [‡]	E(level) [†]	J ^π [‡]	E(level) [†]	J ^π [‡]
0.0 [#]	5/2 ⁻	252.65 [#] 20	11/2 ⁻	512.4 [#] 3	(15/2 ⁻)	1242.9 [#] 5	(23/2 ⁻)
65.55 [#] 16	7/2 ⁻	310.92 [@] 22	(11/2 ⁺)	677.7 [#] 4	(17/2 ⁻)	1490.7 [#] 6	(25/2 ⁻)
150.65 [#] 16	9/2 ⁻	376.6 [#] 3	(13/2 ⁻)	844.7 [#] 4	(19/2 ⁻)	1703.3 [#] 6	(27/2 ⁻)
198.68 [@] 22	(9/2 ⁺)	430.5 [@] 3	(13/2 ⁺)	1051.1 [#] 5	(21/2 ⁻)	1989.0 [#] 7	(29/2 ⁻)

[†] From least-squares fit to γ energies.

[‡] Tentatively assigned in 2018Bh07 from systematics of odd-A Pm isotopes, except for 5/2⁻, 7/2⁻, 9/2⁻, (9/2⁺) and (11/2⁺) levels taken from Adopted Levels (originally from 1996Ta26 in β- decay dataset).

[#] Band(A): 5/2[532] band.

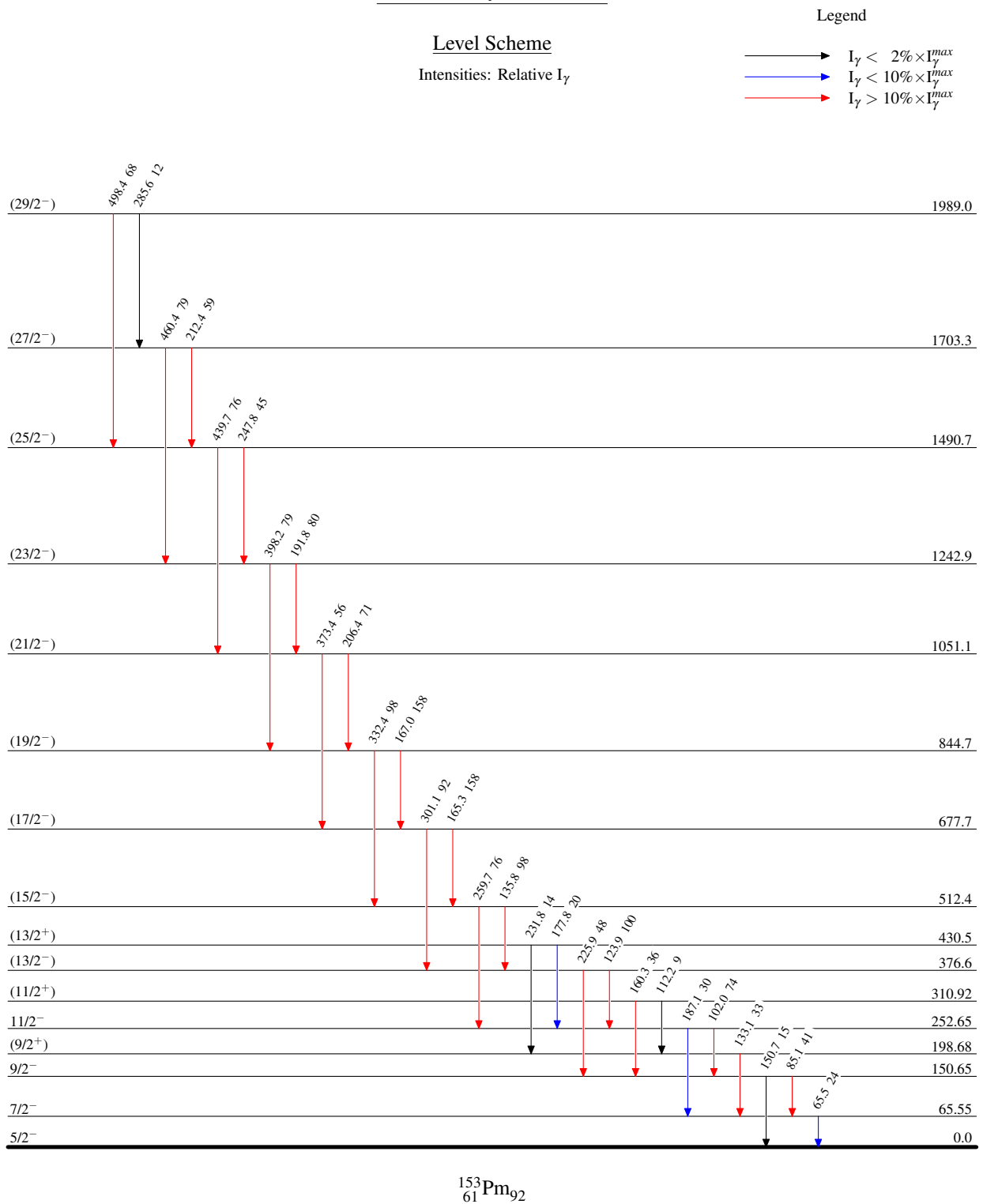
[@] Band(B): 5/2[413] band.

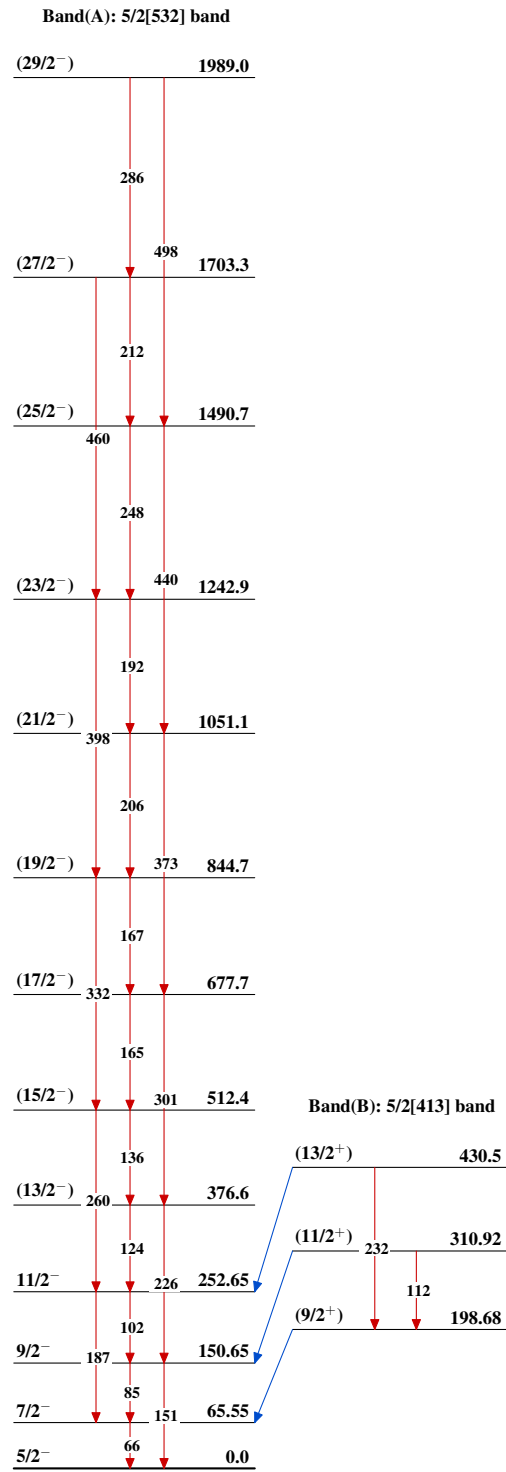
γ(¹⁵³Pm)

E _γ [†]	I _γ	E _i (level)	J _i ^π	E _f	J _f ^π	E _γ [†]	I _γ	E _i (level)	J _i ^π	E _f	J _f ^π
65.5 2	24 6	65.55	7/2 ⁻	0.0	5/2 ⁻	206.4 5	71 8	1051.1	(21/2 ⁻)	844.7	(19/2 ⁻)
85.1 2	41 11	150.65	9/2 ⁻	65.55	7/2 ⁻	212.4 5	59 6	1703.3	(27/2 ⁻)	1490.7	(25/2 ⁻)
102.0 2	74 12	252.65	11/2 ⁻	150.65	9/2 ⁻	225.9 5	48 11	376.6	(13/2 ⁻)	150.65	9/2 ⁻
112.2 2	9 5	310.92	(11/2 ⁺)	198.68	(9/2 ⁺)	231.8 5	14 5	430.5	(13/2 ⁺)	198.68	(9/2 ⁺)
123.9 2	100 9	376.6	(13/2 ⁻)	252.65	11/2 ⁻	247.8 5	45 8	1490.7	(25/2 ⁻)	1242.9	(23/2 ⁻)
133.1 2	33 6	198.68	(9/2 ⁺)	65.55	7/2 ⁻	259.7 5	76 9	512.4	(15/2 ⁻)	252.65	11/2 ⁻
135.8 2	98 2	512.4	(15/2 ⁻)	376.6	(13/2 ⁻)	285.6 5	12 3	1989.0	(29/2 ⁻)	1703.3	(27/2 ⁻)
150.7 2	15 8	150.65	9/2 ⁻	0.0	5/2 ⁻	301.1 5	92 8	677.7	(17/2 ⁻)	376.6	(13/2 ⁻)
160.3 2	36 8	310.92	(11/2 ⁺)	150.65	9/2 ⁻	332.4 5	98 9	844.7	(19/2 ⁻)	512.4	(15/2 ⁻)
165.3 2	158 [‡] 9	677.7	(17/2 ⁻)	512.4	(15/2 ⁻)	373.4 5	56 8	1051.1	(21/2 ⁻)	677.7	(17/2 ⁻)
167.0 2	158 [‡] 9	844.7	(19/2 ⁻)	677.7	(17/2 ⁻)	398.2 5	79 11	1242.9	(23/2 ⁻)	844.7	(19/2 ⁻)
177.8 2	20 6	430.5	(13/2 ⁺)	252.65	11/2 ⁻	439.7 5	76 12	1490.7	(25/2 ⁻)	1051.1	(21/2 ⁻)
187.1 2	30 6	252.65	11/2 ⁻	65.55	7/2 ⁻	460.4 5	79 9	1703.3	(27/2 ⁻)	1242.9	(23/2 ⁻)
191.8 2	80 6	1242.9	(23/2 ⁻)	1051.1	(21/2 ⁻)	498.4 5	68 12	1989.0	(29/2 ⁻)	1490.7	(25/2 ⁻)

[†] From private communication of the evaluator with S. Bhattacharyya, the corresponding author of 2018Bh07 (replacing the rounded off values in Table I). Uncertainties stated in 2018Bh07 as 0.2 keV for energies up to 200 keV, and 0.5 keV, for energies in the 200-500 keV interval.

[‡] Combined intensity of 165γ and 167γ.

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