

¹⁵⁴Sm(d, ³He) 1977SuZW, 1981Le21

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

1976SuZT: abstract; see 1977SuZW which a thesis.

1977SuZW: E=35 MeV; and angular distributions from 5° to 30° in magnetic spectrometer with FWHM=40 keV.

1977MaYN: preliminary report; see 1981Le21.

1981Le21: E=50 MeV and angular distribution in counter telescopes with FWHM ≈ 45 keV. Energies reported only to 10 keV.

¹⁵³Pm Levels

Band assignments are given in those cases where 1977SuZW and 1981Le21 are in substantial agreement. Assignments where they are not in agreement are given in comments. Assignments made in the (pol t,α) study (1978Bu18) which differ are also noted.

E(level) [†]	J ^π	L [‡]	S [#]	Comments
0.0 ^a	5/2 ⁻			E(level): The g.s. was not directly observed in these experiments.
37 ^b	5/2 ⁺	2		
70 ^a	7/2 ⁻	3	0.05	
111 ^b	7/2 ⁺	4	1.4	
153 ^{@a}	9/2 ⁻			E(level): observed peak may be a contaminant, but a level at 151 keV is reported in (pol t,α) (1978Bu18). J ^π : J ^π and band assignment are based upon L=5 in (pol t,α); 1977SuZW tentatively assign L=2 from α(θ).
201 ^{@b}	9/2 ⁺	4,5		
260 ^a	11/2 ⁻	5	0.85	E(level): at 274 (1977SuZW) and 240 (1981Le21).
461 ^{@c}	3/2 ⁺	2		
520 ^c	5/2 ⁺	2	0.48	E(level): at 529 (1977SuZW) and 500 (1981Le21).
560 ^{&}				L: 1981Le21 decomposes α(θ) into L=2 and 5 components, but in text they allow L=0 as an alternative with 1/2 ⁺ , 1/2[420]. assignment.
628? ^{@c}	(7/2 ⁺)			J ^π : The 7/2 ⁺ , 3/2[411] state is assigned to this level, but in (pol t,α) it is assigned to level at 588 keV.
710	3/2 ⁺ , 5/2 ⁺	2	0.71	J ^π : Assigned 3/2 ⁺ , 3/2[422] by 1977SuZW, 5/2 ⁺ , 1/2[420] by 1981Le21, and 1/2 ⁺ , 1/2[420] in (pol t,α) by 1978Bu18.
780	3/2 ⁺ , 5/2 ⁺	2	0.64	J ^π : Assigned 5/2 ⁺ , 3/2[422] by 1977SuZW, a doublet of 3/2 ⁺ , 3/2[422] and 5/2 ⁺ , 3/2[422] by 1981Le21, and 5/2 ⁺ , 1/2[420] in (pol t,α) by 1978Bu18.
850 [@]	(7/2 ⁺)	4		J ^π : Reported as a strong line and assigned 7/2 ⁺ , 3/2[422] by 1977SuZW, but not observed by 1981Le21, so existence of line and assignment are doubtful.
930	9/2 ⁺ , 7/2 ⁺	4		J ^π : Assigned 9/2 ⁺ , 3/2[422] by 1977SuZW, 7/2 ⁺ , 3/2[422] by 1981Le21, and doublet of 9/2 ⁺ , 1/2[420] and 3/2 ⁻ , 3/2[541] in (pol t,α) by 1978Bu18.
960 ^d	(3/2 ⁻)	(1,2)		E(level): 1981Le21 reports a doublet at 940 which is taken to be the 920 and 968 lines of 1977SuZW. J ^π : Assigned (3/2 ⁻ , 3/2[541]) by 1977SuZW based upon L=(1), L=2 by 1981Le21.
1000 ^d	(7/2 ⁻)	3+2	1.0+0.38	J ^π : J ^π and band assignments are for L=3 portion of peak.
1150 ^d	11/2 ⁻	5	1.3	
1180 ^{&}		2	0.52	
1211 [@]	3/2 ⁺	2		
1273 [@]	7/2 ⁺ , 9/2 ⁺	4		
1352				L: Reported as L=3 by 1977SuZW and L=4 by 1981Le21. J ^π : Assigned 7/2 ⁻ , 1/2[550] by 1977SuZW, 9/2 ⁺ , 9/2[404] by 1981Le21, and 7/2 ⁺ , 3/2[422] in (pol t,α) by 1978Bu18.

[†] From 1977SuZW and 1981Le21; levels from only one reference noted.

 $^{154}\text{Sm}(d,^3\text{He})$ [1977SuZW](#), [1981Le21](#) (continued) ^{153}Pm Levels (continued)

‡ From [1977SuZW](#) and [1981Le21](#) based on DWBA analysis.

From [1981Le21](#).

@ From [1977SuZW](#) only.

& From [1981Le21](#) only.

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

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

^c Band(C): 3/2[411] band.

^d Band(D): 3/2[541] band.

$^{154}\text{Sm}(\text{d}, ^3\text{He})$ 1977SuZW,1981Le21

Band(D): 3/2[541] band

11/2⁻ 1150(7/2)⁻ 1000(3/2⁻) 960

Band(C): 3/2[411] band

(7/2⁺) 6285/2⁺ 5203/2⁺ 461

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

11/2⁻ 260

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

9/2⁺ 2019/2⁻ 1537/2⁺ 1117/2⁻ 705/2⁺ 375/2⁻ 0.0 $^{153}_{61}\text{Pm}_{92}$