^{150}Sm(d,^{3}He) 1981Le21

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 185, 2 (2022)	23-Aug-2022

1981Le21: E(d)=50 MeV from the KVI AVF cyclotron. Targets of 89% ^{150}Sm in Sm_2O_3, 650 $\mu g/cm^2$. $\sigma(\theta)$ measured at 10 angles with uncertainty of 10% and used to deduce L values. FWHM=45 keV. Unresolved multiplets analyzed with a peak fitting program to give level energies to within 10 keV.

^{149}Pm Levels

E(level)[†]	L	S[‡]	Comments
0	4	4.0	
110 *10*	2	1.2	
230[#] *10*	5+(1)[#]	2.0,0.21	E(level),L: part of an unresolved triplet including the 211, 240, and 270 states. S: for L=1 component, value is for $2p_{1/2}$ factor; 0.09 if $3p_{1/2}$ form factor is used.
270[#] *10*	[#]		E(level): see comment for 230 level.
380 *10*	4+2	2.3,0.42	E(level),L: part of an unresolved triplet of energies 360, 387, and 415 with L=4,0,2, respectively, as seen in ^{150}Sm(pol t,α) reaction. The L=0 component is not found in the analysis of the compound peak in the ^{150}Sm(d,^{3}He) reaction.
420 *10*			E(level): see comment for 380 state.
560[#] *20*	4+(1)[#]	0.29,0.05	E(level),L: L=4 inconsistent with 552 L=5 level from (pol t,α). S: for L=1 component, value is for $2p_{1/2}$ factor; 0.02 if $3p_{1/2}$ form factor is used.
730 *10*	2+4	0.15,0.94	E(level): corresponds to the 721(L=4) and 751(L=2) states in (pol t,α).
790 *10*	2+4	0.08,0.67	E(level): possibly corresponds to 786.72 ($3/2^+$,$5/2^+$) state seen in β^- decay and the 791 (L=5) state in (t,α) and other reactions.
880 *10*	2+4	0.16,0.79	E(level): there are probably several states contributing to this peak.
940[#] *10*	2+(1)[#]	0.13,0.09	E(level),L: in addition to the L=2 state which may be the 955($5/2^+$) level there appears to be an L=1 component. S: for L=1 component, value is for $2p_{1/2}$ factor; 0.04 if $3p_{1/2}$ form factor is used.
1350 *10*	1	0.2	E(level): probably corresponds to 1329 and/or 1367 in Adopted Levels. S: for L=1 component, value is for $2p_{1/2}$ factor; 0.09 if $3p_{1/2}$ form factor is used.

[†] Most levels reported here are unresolved multiplets.

[‡] σ(exp)/(N×σ(theory)). σ(theory) obtained from a DWBA calculation using computer code DWUCK, and optical model and normalization factors given by authors. Despite slight differences in nomenclature, the S values derived from the (^{3}He,d), (α,t), (t,α) and (d,^{3}He) reactions are comparable.

[#] The authors fit unresolved multiplets with incoherent combinations of DWBA distributions using L values from earlier work for the strong components and allowing the program to seek other L values. Strong L=1 state is thus identified. Whether this is a real state or a creation of the analysis remains unclear. This state is not included in the Adopted Levels.