^{148}Sm(t,α) 1979St01

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	N. Nica and B. Singh	NDS 181, 1 (2022)	9-Mar-2022

Additional information 1.
1979St01: E(t)=17 MeV. Measured Eα, cross sections at 30° and 40° with FWHM≈20 keV using Q3D magnetic spectrograph.
1979St01 also report data from ^{146}Nd(^{3}He,d) and ^{146}Sm(α,t) reactions. See separate datasets for these reactions.

^{147}Pm Levels

Relative cross sections are accurate to 10% while the absolute cross sections have uncertainties of ≈25%.

E(level)[†]	C^{2}S[b]	Comments
0[&]	4.12	C^{2}S: for L=4, J^π=7/2$^+$. dσ/dΩ (μb/sr)=525 (30°), 430 (40°).
90[@] *4*	1.70	C^{2}S: for L=2, J^π=5/2$^+$. dσ/dΩ (μb/sr)=441 (30°), 345 (40°).
409 *4*		dσ/dΩ (μb/sr)=16 (30°), 16 (40°).
492[&] *4*	0.29	C^{2}S: for J^π=7/2$^+$. dσ/dΩ (μb/sr)=35 (30°), 30 (40°).
530[@] *4*	0.26	C^{2}S: for J^π=5/2$^+$. dσ/dΩ (μb/sr)=5.5 (30°), 7 (40°).
645[‡a] *4*	<0.97,2.6	C^{2}S: for L=0+5, J^π=1/2$^+$ and 11/2$^-$. E(level),C^{2}S: 645 peak analyzed as a doublet with L=0+5, assuming the same contributions from $s_{1/2}$ and $h_{11/2}$ as in (t,α) for ^{149}Pm. dσ/dΩ (μb/sr)=308 (30°), 214 (40°).
684[@] *4*	0.85	C^{2}S: for L=(2), J^π=5/2$^+$. dσ/dΩ (μb/sr)=221 (30°), 205 (40°).
736[#] *4*	0.03	C^{2}S: for L=(2). dσ/dΩ (μb/sr)=8.7 (30°), 14 (40°).
809[#] *4*	0.02	C^{2}S: for L=2. dσ/dΩ (μb/sr)=7.1 (30°), 7 (40°).
885[#] *4*	0.20	C^{2}S: for L=2. dσ/dΩ (μb/sr)=56 (30°), 51 (40°).
936[‡] *4*	0.11	C^{2}S: for L=0, J^π=1/2$^+$. dσ/dΩ (μb/sr)=46 (30°), 23 (40°).
984? *4*		dσ/dΩ (μb/sr)=9.5 (30°), 7 (40°).
1047[#] *4*	0.08	C^{2}S: for L=2. dσ/dΩ (μb/sr)=23 (30°), 18 (40°).
1186 *4*		dσ/dΩ (μb/sr)=11 (30°), 11 (40°).
1325 *4*		dσ/dΩ (μb/sr)=22 (30°), 43 for 1325+1349 (40°).
1349[#] *4*	0.17	C^{2}S: for L=2. dσ/dΩ (μb/sr)=47 (30°), 43 for 1325+1349 (40°).
1435 *4*		dσ/dΩ (μb/sr)=43 (30°), 40 (40°).
1481 *4*		dσ/dΩ (μb/sr)=17 (30°), 7 (40°).
1505 *4*		dσ/dΩ (μb/sr)=7 (30°), 14 (40°).
1550 *4*		dσ/dΩ (μb/sr)=7 (30°), 15 (40°).
1591 *4*		dσ/dΩ (μb/sr)=51 (30°), 43 (40°).
1646 *4*		dσ/dΩ (μb/sr)=28 (30°), 26 for 1646+1667 (40°).
1667 *4*		dσ/dΩ (μb/sr)=22 (30°), 26 for 1646+1667 (40°).
1723 *4*		dσ/dΩ (μb/sr)=19 (30°), 18 (40°).
1805 *4*		dσ/dΩ (μb/sr)=31 (30°), 29 (40°).
1910 *4*		dσ/dΩ (μb/sr)=22 (30°), 16 (40°).

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^{148}Sm(t,α) 1979St01 (continued)

^{147}Pm Levels (continued)

E(level)[†]	Comments
1938 *4*	dσ/dΩ (μb/sr)=19 (30°), 15 (40°).
2025 *4*	dσ/dΩ (μb/sr)=15 (30°), 14 (40°).
2112 *4*	dσ/dΩ (μb/sr)=17 (30°), 19 (40°).
2157 *4*	dσ/dΩ (μb/sr)=11 (30°), 10 (40°).
2201 *4*	dσ/dΩ (μb/sr)=11 (30°), 18 (40°).

[†] Uncertainties are stated by 1979St01 as less than 4 keV.
[‡] Assigned as fragment of $s_{1/2}$ orbital (1979St01).
[#] Assigned as fragment of $d_{3/2}$ and/or $d_{5/2}$ orbital (1979St01).
[@] Assigned as fragment of $d_{5/2}$ orbital (1979St01).
[&] Assigned as fragment of $g_{7/2}$ orbital (1979St01).
[a] Assigned as fragment of $h_{11/2}$ orbital (1979St01).
[b] Experimental summed spectroscopic strengths for different orbitals were deduced by 1979St01 as: ≈0.41 for $s_{1/2}$, 2.81 for $d_{5/2}$, 0.73 for $d_{3/2}$ and/or $d_{5/2}$, (4.53) for $g_{7/2}$ and ≈1.84 for $h_{11/2}$.