^{148}Sm(α,t) 1979St01,1987DuZX

History

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

1979St01: E(α)=27 MeV beam from McMaster University tandem accelerator. Measured $\sigma(\theta)$, θ=50° and 60°. FWHM≈14 keV. DWBA calculations.

1987DuZX: E(α)=100 MeV. Measured $\sigma(\theta)$. FWHM≈300 keV. DWBA calculations. Groups are reported at 110, 496, 1070, 1470 and 1740 keV. C^2S values are given for L=2, 4 and 5 for each of these groups. $\sigma(\theta)$ data for high-lying states in the 2-15 MeV range analyzed by slicing the region in 520-keV bins.

^{149}Eu Levels

E(level)[†]	L[‡]	dσ/dΩ (μb/sr)[#]	Comments
0	(2)	51, 61	
150 *4*	(4,5)	26, 34	E(level): 1987DuZX report a group at 110 (probably g.s.+150) with L=2+4 and C^2S=0.25 (L=2), 0.24 (L=4).
460 *4*	(0,2)	38, 50	E(level): most likely a doublet. L(^{3}He,d)=0 suggests $1/2^+$ for one and ^{149}Gd ε decay suggests $3/2^+$ to $7/2^+$ for the other. But L=(2) would allow $3/2^+$ or $5/2^+$.
496 *4*	(5)	167, 165	E(level): 1987DuZX report a group at 496 (probably 460+496) with L=2+5 and C^2S=0.82 (L=2), 0.42 (L=5). L=2 may correspond to 460, and L=5 to 496 (see also the Adopted Levels).
767 *4*	(0)	3, 3	
809 *4*	(2)	3, 5	
875 *4*	(2)	4, 5	
929?		2	dσ/dΩ at 60°.
1130 *4*	(4,5)	3, 3	E(level): 1987DuZX report a 1070 group (probably 1130+1219) with L=2+5 and C^2S=0.08 (L=2 and 5).
1219 *4*	(2)	3, 3	
1305 *4*	(2)		
1396 *4*	(0)	1, 2	
1440 *4*	(0,2)	3, 2	E(level): 1987DuZX report a 1470 group (probably 1440+1503) with L=2+5.
1503 *4*	(5)	15, 16	L: from 1987DuZX for a 1470 group with L=2+5 and C^2S=0.33 (L=2), 0.14 (L=5).
1539?	(0)	1 LT	dσ/dΩ at 60°.
1718?	(4)	1	L: from 1987DuZX for a group at 1740 with C^2S=0.42.
1816?		1	
1888?		1	

[†] From 1979St01. Uncertainty=4 keV, from authors' general statement that it is ≤4 keV.

[‡] From $\sigma(\alpha,t)/\sigma(^3He,d)$ (1979St01).

[#] From 1979St01 at 50° and 60°. First value for 50°, second for 60°, when two values are listed. For high-lying states in the 2-15 MeV range, $\Sigma(C^2S)$=3.8 *8* (L=3), 1.14 *10* (L=5), 0.70 *1* (L=6).