

<sup>166</sup>Er(<sup>3</sup>He,d), (α,t) 1974Ch44

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 90, 431 (2000)	5-Jul-2000

E(<sup>3</sup>He)=24 MeV (nine angles used), E(α)=27 MeV (θ=45°, 60°); Er oxide targets enriched to 96.24% in <sup>166</sup>Er; measured E(level) (mag spect with photographic emulsions, FWHM=16-18 keV), (<sup>3</sup>He,d) angular distributions, (<sup>3</sup>He,d) and (α,t) differential cross sections and cross-section ratios; interpreted level structure using 'fingerprint' method (comparison of spectroscopic factors from DWBA calculations with Nilsson-model predictions (pairing corrections and Coriolis couplings considered)).

<sup>167</sup>Tm Levels

All levels are observed in both (<sup>3</sup>He,d) and (α,t), unless noted to the contrary.

E(level) <sup>†</sup>	J <sup>π</sup> <sup>‡</sup>	L <sup>#</sup>	S <sup>@</sup>	Comments
0.0 <sup>a</sup>	1/2 <sup>+</sup>			
10 <sup>a</sup> 2	3/2 <sup>+</sup>			S=0.66 if entire cross section for 0.0+10 levels is assumed to belong to the 10-keV level.
116 <sup>a</sup> 2	5/2 <sup>+</sup>		0.37	S: 1974Ch44 note that this value is about 2 to 3 times larger than that predicted for the 5/2 <sup>+</sup> 1/2[411] state (as observed for <sup>165</sup> Tm, <sup>169</sup> Tm, <sup>171</sup> Tm also).
142 <sup>a</sup> 2	7/2 <sup>+</sup>		0.22	
183 2				Complex peak. S=3.71 if entire cross section is assumed to be for the 7/2 <sup>+</sup> 7/2[404] level. S=1.05 if entire cross section is assumed to be for the 5/2 <sup>-</sup> 1/2[541] level.
290 2				Complex peak. S=0.15 if entire cross section is assumed to be for the 3/2 <sup>-</sup> 1/2[541] level. S=2.10 if entire cross section is assumed to be for the 9/2 <sup>-</sup> 1/2[541] level. S=0.33 if entire cross section is assumed to be for the 7/2 <sup>-</sup> 7/2[523] level.
325 <sup>a</sup> 2	9/2 <sup>+</sup>			
463 <sup>b</sup> 2	7/2 <sup>-</sup>		0.10	
471 <sup>c</sup> 2	3/2 <sup>+</sup>		0.04	
497 <sup>d</sup> 2	11/2 <sup>-</sup>		0.86	
522 <sup>c</sup> 2	5/2 <sup>+</sup>		1.17	Authors' band assignments for 522 and 558 levels interchanged by evaluator, consistent with E <sub>γ</sub> and coincidence data in <sup>165</sup> Ho(α,2nγ), <sup>167</sup> Er(p,nγ).
558 <sup>e</sup> 2	5/2 <sup>+</sup>		0.33	See comment with 522 level.
604 2				
701 2				
717 2				
771 2				
1044 <sup>f</sup> 2	11/2 <sup>-</sup>		0.88	
1125 2	1/2 <sup>+</sup>	0		
1168& 2				
1235& 2				
1374& 2				
1403 2	1/2 <sup>+</sup>	0		
1528 2		(3)		1974Ch44 suggest that 1528 level might be 7/2 <sup>-</sup> 1/2[530] state. See <sup>167</sup> Tm Adopted Levels for (5/2 <sup>-</sup> ) assignment to state at 1527.5 keV.
1549 2				
1582 2				
1597 2				
1630 2				
1644& 2				
1672& 2				

Continued on next page (footnotes at end of table)

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 $^{166}\text{Er}({}^3\text{He,d}), (\alpha,t)$  [1974Ch44](#) (continued) $^{167}\text{Tm}$  Levels (continued)E(level)<sup>†</sup>

1701&amp; 2

1718&amp; 2

<sup>†</sup> From ( ${}^3\text{He,d}$ ) (values from  $(\alpha,t)$  agree within 2 keV).

<sup>‡</sup> From ( ${}^3\text{He,d}$ ) angular distributions and ( ${}^3\text{He,d}$ )/ $(\alpha,t)$  cross-section ratios (authors' values).

# From DWBA analysis of angular distributions.

@ Spectroscopic factor for ( ${}^3\text{He,d}$ ) (N=4.42); see [1974Ch44](#) for spectroscopic factors for  $(\alpha,t)$ .

& Observed only in ( ${}^3\text{He,d}$ ).

<sup>a</sup> 1/2[411] band member.

<sup>b</sup> 1/2[541] band member; large decoupling parameter ( $\approx 3$ ) leads to strongly perturbed level order.

<sup>c</sup> 3/2[411] band member.

<sup>d</sup> 7/2[523] band member.

<sup>e</sup> 5/2[402] band member.

<sup>f</sup> 9/2[514] band member.