

<sup>171</sup>Yb(t,α) 1981De29

Type	Author	History	Citation	Literature Cutoff Date
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Target J<sup>π</sup>=1/2<sup>-</sup>.

E=17 MeV; 88.2% <sup>171</sup>Yb target, FWHM≈16 keV, Q3D spectrometer; measured Eα and σ(θ) in 5° steps from 15° to 50°; DWBA analysis of σ(θ); assigned Nilsson configurations.

<sup>170</sup>Tm Levels

E(level) <sup>@</sup>	J <sup>π</sup> †	L‡	dσ/dΩ(30°) <sup>#</sup>	E(level) <sup>@</sup>	J <sup>π</sup> †	L‡	dσ/dΩ(30°) <sup>#</sup>
0.0 <sup>a</sup>	1 <sup>-</sup>		6.9	891 <sup>j</sup> 4	5 <sup>+</sup>	5	41.4
40.0 <sup>a</sup> 18	2 <sup>-</sup>		44.2	921 <sup>e</sup> 2	3 <sup>-</sup>	2	70.9
114.7 <sup>a</sup> 18	3 <sup>-</sup>		4.6	948 <sup>m</sup> 4	6 <sup>+</sup>	5	60.3
148 <sup>&amp;</sup> 4	0 <sup>-</sup>		2.2	969 9			15.8
182 <sup>a</sup> 3	4 <sup>-</sup>		5.1	1011 <sup>j</sup> 1	6 <sup>+</sup>	5	22.4
194 <sup>c</sup> 6	(2 <sup>-</sup> )			1061 9			6.5
220.1 <sup>&amp;</sup> 9	2 <sup>-</sup>		32.9	1081 7			6.0
238.6 <sup>&amp;</sup> 18	1 <sup>-</sup>	2	20.4	1110 11			2.8
270.4 <sup>c</sup> 10	(3 <sup>-</sup> )		1.3	1192 3			2.8
318 <sup>a</sup> 15	(5 <sup>-</sup> )		4.4	1213 <sup>k</sup> 6	3 <sup>-</sup>	2	8.4
332 5			5.0	1230 5			6.0
351 <sup>&amp;</sup> 3	3 <sup>-</sup>		12.3	1291 <sup>k</sup> 6	4 <sup>-</sup>		15.7
381 <sup>&amp;</sup> 3	4 <sup>-</sup>		2.4	1313 <sup>n</sup> 5	1 <sup>-</sup>	2	10.5
420 7			≈2.0	1351 <sup>n</sup> 2	2 <sup>-</sup>	2	12.0
449 <sup>g</sup> 20	(3 <sup>-</sup> )		≈3.0	1382 <sup>f</sup> 2	2 <sup>-</sup>	2	14.2
559 <sup>&amp;</sup> 8	(5 <sup>-</sup> )		≈3.0	1448 <sup>f</sup> 1	3 <sup>-</sup>	4	15.0
605 2			3.8	1488 2			6.5
618 5			4.2	1539 <sup>f</sup> 13	4 <sup>-</sup>		2.1
644 <sup>l</sup> 5	4 <sup>-</sup>		19.1	1566 8			1.8
687 5			29.0	1587 7			2.1
716 <sup>d</sup> 4	2 <sup>-</sup>	2	10.7	1640 5			2.7
743.6 <sup>b</sup> 23	2 <sup>-</sup>	2	78.5	1679 13			4.9
774 <sup>h</sup> 4	3 <sup>-</sup>	4	12.8	1703 10			2.2
801 <sup>b</sup> 6	3 <sup>-</sup>		2.2	1742 5			4.4
829 <sup>m</sup> 7	5 <sup>+</sup>		17.8	1829 4			14.6
851 <sup>e</sup> 8	2 <sup>-</sup>	2	53.4	1847 8			5.4
867 <sup>i</sup> 6	3 <sup>-</sup>		≈40	1868 3			7.0

† Authors' values, based on σ(θ), and on band configuration analysis. Note that several of these differ from values in Adopted Levels.

‡ Based on comparison of measured σ(θ) with DWBA calculations (normalization factor=5.5).

# dσ/dΩ(30°) in μb/sr; uncertainties not stated by authors.

@ From α- particle energies.

& Band(A): K<sup>π</sup>=0<sup>-</sup> band. Configuration (π 1/2[411])-(ν 1/2[521]).

<sup>a</sup> Band(B): K<sup>π</sup>=1<sup>-</sup> g.s. band. Configuration (π 1/2[411])+(ν 1/2[521]).

<sup>b</sup> Band(C): K<sup>π</sup>=1<sup>-</sup> band. Configuration (π 3/2[411])-(ν 1/2[521]).

<sup>c</sup> Band(D): K<sup>π</sup>=2<sup>-</sup> band. Configuration (π 1/2[411])-(ν 5/2[512]). The authors note that this configuration can not be excited in (t,α) via a one-step mechanism; the admixture of configuration (π 5/2[413])-(ν 1/2[521]) required for consistency with experiment is much larger than predicted by authors' residual interaction mixing calculations.

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 $^{171}\text{Yb}(t,\alpha)$  **1981De29 (continued)**

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 $^{170}\text{Tm}$  Levels (continued)

- d* Band(E):  $K^\pi=2^-$  band. Configuration  $(\pi 5/2[402])-(\nu 1/2[521])$ . Level's excitation is stronger than expected for this configuration.
- e* Band(F):  $K^\pi=2^-$  band. Configuration  $(\pi 3/2[411])+(\nu 1/2[521])$ .
- f* Band(G):  $K^\pi=2^-$  band. Configuration  $(\pi 5/2[413])-(\nu 1/2[521])$ .
- g* Band(H):  $K^\pi=3^-$  band. Configuration  $(\pi 1/2[411])+(\nu 5/2[512])$ . The authors note that this configuration can not be excited in  $(t,\alpha)$  via a one-step mechanism; the admixture of configuration  $(\pi 5/2[413])+(\nu 1/2[521])$  required for consistency with experiment is much larger than predicted by authors' residual interaction mixing calculations.
- h* Band(I):  $K^\pi=3^-$  band. Configuration  $(\pi 7/2[404])-(\nu 1/2[521])$ .
- i* Band(J):  $K^\pi=3^-$  band. Configuration  $(\pi 5/2[402])+(\nu 1/2[521])$ . Level's excitation is stronger than expected for this configuration.
- j* Band(K):  $K^\pi=3^+$  band. Configuration  $(\pi 7/2[523])-(\nu 1/2[521])$ .
- k* Band(L):  $K^\pi=3^-$  band. Configuration  $(\pi 5/2[413])+(\nu 1/2[521])$ .
- l* Band(M):  $K^\pi=4^-$  band. Configuration  $(\pi 7/2[404])+(\nu 1/2[521])$ .
- m* Band(N):  $K^\pi=4^+$  band. Configuration  $(\pi 7/2[523])+(\nu 1/2[521])$ .
- n* Band(O):  $K^\pi=1^-$  band.  $\gamma$ -vibration built on  $K^\pi=1^-$  g.s. band.

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			<b>Band(F): <math>K^\pi=2^-</math> band</b>
			<u>3<sup>-</sup> 921</u>
			<u>2<sup>-</sup> 851</u>
	<b>Band(C): <math>K^\pi=1^-</math> band</b>		
	<u>3<sup>-</sup> 801</u>		
	<u>2<sup>-</sup> 743.6</u>	<b>Band(E): <math>K^\pi=2^-</math> band</b>	
		<u>2<sup>-</sup> 716</u>	
<b>Band(A): <math>K^\pi=0^-</math> band</b>			
<u>(5<sup>-</sup>) 559</u>			
<u>4<sup>-</sup> 381</u>			
<u>3<sup>-</sup> 351</u>	<b>Band(B): <math>K^\pi=1^-</math> g.s. band</b>		
	<u>(5<sup>-</sup>) 318</u>		
		<b>Band(D): <math>K^\pi=2^-</math> band</b>	
		<u>(3<sup>-</sup>) 270.4</u>	
<u>1<sup>-</sup> 238.6</u>			
<u>2<sup>-</sup> 220.1</u>			
	<u>4<sup>-</sup> 182</u>	<u>(2<sup>-</sup>) 194</u>	
<u>0<sup>-</sup> 148</u>			
	<u>3<sup>-</sup> 114.7</u>		
	<u>2<sup>-</sup> 40.0</u>		
	<u>1<sup>-</sup> 0.0</u>		

$^{171}\text{Yb}(t,\alpha)$  **1981De29 (continued)****Band(G):  $K^\pi=2^-$  band**4<sup>-</sup> 15393<sup>-</sup> 14482<sup>-</sup> 1382**Band(L):  $K^\pi=3^-$  band**4<sup>-</sup> 12913<sup>-</sup> 1213**Band(K):  $K^\pi=3^+$  band**6<sup>+</sup> 1011**Band(J):  $K^\pi=3^-$  band** 5<sup>+</sup> 8913<sup>-</sup> 867**Band(I):  $K^\pi=3^-$  band**3<sup>-</sup> 774**Band(H):  $K^\pi=3^-$  band**(3<sup>-</sup>) 449 $^{170}_{69}\text{Tm}_{101}$

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 $^{171}\text{Yb}(t,\alpha)$  **1981De29 (continued)**Band(O):  $K^\pi=1^-$  band2<sup>-</sup>            13511<sup>-</sup>            1313Band(N):  $K^\pi=4^+$  band6<sup>+</sup>            9485<sup>+</sup>            829Band(M):  $K^\pi=4^-$  band4<sup>-</sup>            644 $^{170}_{69}\text{Tm}_{101}$