^{169}Tm(d,t) 1973Ko06,1973Pr06

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 111, 1807 (2010)	15-Jun-2010

$J^\pi(^{169}Tm)=1/2^+$.

1973Ko06: E(d)=17.0 MeV; θ=7.5° to 45° (2.5° intervals), 45° to 90° (5° intervals); metallic Tm target; measured E(level) (split-pole mag spect, FWHM=9), differential cross sections, angular distributions.

1973Pr06: E(d)=12 MeV; θ=5°, 20°, 60°; metallic Tm target; measured E(level) (split-pole mag spect, FWHM=6), differential cross sections.

Other: 1971Jo18.

^{168}Tm Levels

E(level)[†]	J^π[&]	L[‡]	C^2S[#]	Comments
3[c]	1^-	1	0.14	E(level): estimated from $\Delta E(4^+ \text{ to } 3^+)$=64 *2* in ($\alpha$,t) (1973Pr06) and $\Delta E(4^+ \text{ to } 1^-)$=61 in (d,t) (1973Ko06).
41[@c] *1*	2^-	(3)	0.04	
64[@e] *1*	4^+	4	0.30	
112[c] *2*	3^-	(3)	0.04	
144 *3*		4	0.14	
167[d] *2*	0^-	1	0.084	
178[c] *2*	4^-	(3)	0.07	
229[d] *2*	1^-	1	0.11	
235[@d] *1*	2^-			
243[@e] *1*	6^+	6	1.25	
325 *2*	3^-[a]	(3)	0.09	
347[d] *2*	3^-	3	0.12	
353[@e]	7^+			
383[d] *2*	4^-	3	0.11	
439[@]				
445[f] *2*	7^+	6	1.5	
≈499[@]	*a*			
592 *2*	4^-[a]	3	0.09	
614[b] *2*		1	0.029	
638 *2*		1	0.009	
664[b] *2*		1	0.007	
702 *2*		(1+3)	0.05	C^2S: for L=1; C^2S=0.11 for L=3.
708[@] *1*				
717[@]				
726[b] *2*		3	0.12	
734[@] *1*				
769 *2*		(4)	0.62	
780 *3*		(1+3)	0.01	C^2S: for L=1; C^2S=0.05 for L=3.
790[@] *1*		1	0.057	E(level): other E: 792 *2* (1973Ko06). possible (ν 1/2[510])-(π 1/2[411])) state (1973Ko06).
794[@] *1*				
798[@] *1*				
820 *2*		(2)	0.04	
836 *4*		1	0.009	
853[@] *1*		3	0.18	L,C^2S: for 853 or 859 level. the 853 or 859 level May Be a 2^-, (ν 1/2[510])-(π 1/2[411])) state (1973Ko06).

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^{169}Tm(d,t) 1973Ko06,1973Pr06 (continued)

^{168}Tm Levels (continued)

E(level)[†]	Jπ[&]	L[‡]	C²S[#]	Comments
859[@] *1*				L,C²S,Jπ: see comment on 853 level.
866[@] *1*				
887 *1*		1	0.10	possible 2⁻, (ν 1/2[510])+(π 1/2[411])) state (1973Ko06).
897[@] *1*				1973Ko06 report E(level)=902 for a complex peak, probably composed of the 897 and 905 levels in 1973Pr06. The L=1 component has C²S=0.06, and the L=3 component, C²S=0.08. the 879 and/or the 905 level May Be the 2⁻ bandhead for the ((ν 5/2[523])-(π 1/2[411])) configuration (1973Ko06).
905[@] *1*				See comment with 897 level.
915[@]				1973Ko06 report E(level)=918 for a complex peak, probably composed of the 915 and 921 levels in 1973Pr06. The L=3 component has C²S=0.09, and the L=5 component, C²S=1.2.
921[@] *1*				See comment with 915 level.
937[@] *1*		3	0.10	
945[@]				
953[@] *1*		3	0.081	possible 3⁻, ((ν 5/2[523])-(π 1/2[411])) configuration state (1973Ko06).
966[j] *3*		(3+5)	0.05	C²S: for L=3; C²S=0.52 for L=5.
985 *2*		3	0.055	
991[@]				
1019 *6*		(3)	0.03	
1041 *1*		3	0.17	
1052[@]		3	0.24	possible 4⁻, ((ν 5/2[523])-(π 1/2[411])) configuration state (1973Ko06).
1056[h] *2*	0⁺			
1063[@] *2*				
1077 *5*		(3)	0.07	
1098[j] *2*		(5)	1.6	
1115[i] *2*	2⁺	2	0.58	
1127[h] *2*	1⁺	0	0.27	
1133[@h] *1*	2⁺			
1165 *2*		(5)	0.54	possible 5⁻, ((ν 5/2[523])-(π 1/2[411])) configuration state (1973Ko06).
1182[i] *2*	3⁺	(2)	0.10	
1194 *2*		(2)	0.05	
1240[h] *2*	3⁺	2	0.23	
1260 *2*		2	0.35	
1268[@] *1*				
1276[@] *1*		2	0.22	
1281[@] *1*				
1302 *2*		(2)	0.09	
1311 *2*		0	0.048	
1330 *2*		(3)	0.15	
1347[g] *2*	1⁺	0	0.28	
1356[@] *1*				
1362 *2*		(2)	0.09	
1378[g] *3*	2⁺	(2)	0.08	
1390 *6*		(1)	0.016	
1407 *4*		0	0.035	
1426[k] *2*	1⁺	0	0.27	
1436[@]				
1445 *2*		0	0.051	
1465 *2*		0	0.28	Jπ: 1973Pr06 assign 2⁺ (Configuration=((ν 3/2[402])-(π 1/2[411]))), inconsistent with L=0.
1472[@] *1*				
1484 *5*		(2)	0.05	

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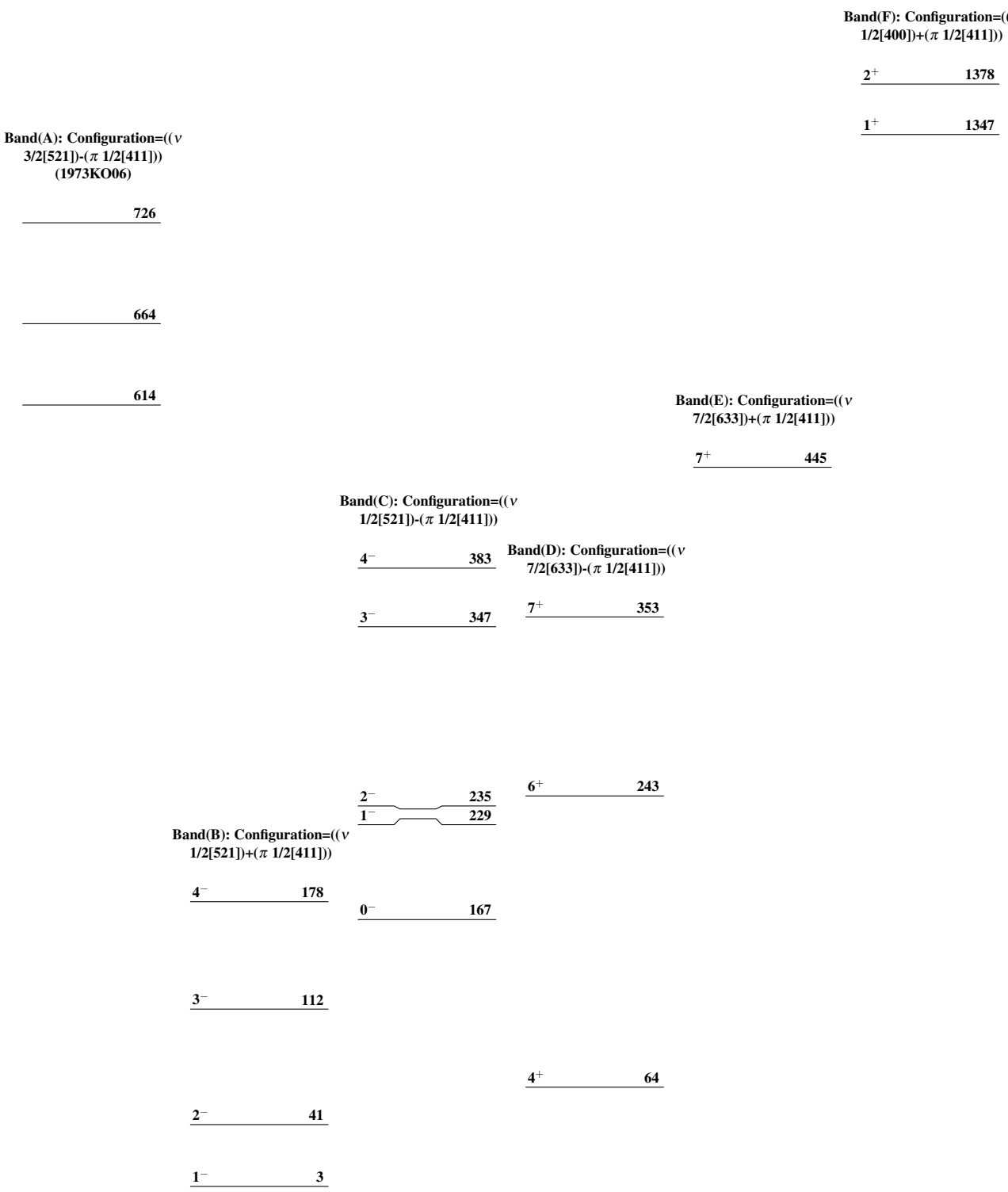
^{169}Tm(d,t) 1973Ko06,1973Pr06 (continued)

^{168}Tm Levels (continued)

E(level)[†]	L[‡]	C^2S[#]	Comments
1506 *2*	0	0.068	J^π: 1973Pr06 assign 3^+ (Configuration=((ν 3/2[402])-(π 1/2[411]))), inconsistent with L=0.
1520[@]			
1554[@]			
1568[@]			
1604[@]			
1621[@]			
1637[@]			
1662[@] *1*			
1690[@]			
1742[@]			

[†] Based on data from 1973Ko06, except As noted. 1973Ko06 measured E relative to energy of lowest level observed (g.s. not populated); those values have been increased by 3 keV based on comparison with E(level) from ^{167}Er(^{3}He,d) (In which g.s. is populated).
[‡] From DWBA analysis of triton angular distributions in 1973Ko06.
[#] C^2S: dσ/dΩ(exp)/(N dσ/dΩ(theory)), N=3.33 (1973Ko06).
[@] From 1973Pr06; ΔE≈1 keV for the stronger peaks (assumed to be those for which dσ/dΩ>5 μb/sr).
[&] From cross sections and model arguments (1973Pr06). See ^{168}Tm Adopted Levels for evaluator's assignments based on L-values (1973Ko06) in addition to data from 1973Pr06.
[a] Configuration=((ν 5/2[512])±(π 1/2[411])).
[b] Band(A): Configuration=((ν 3/2[521])-(π 1/2[411])) (1973KO06).
[c] Band(B): Configuration=((ν 1/2[521])+(π 1/2[411])).
[d] Band(C): Configuration=((ν 1/2[521])-(π 1/2[411])).
[e] Band(D): Configuration=((ν 7/2[633])-(π 1/2[411])).
[f] Band(E): Configuration=((ν 7/2[633])+(π 1/2[411])).
[g] Band(F): Configuration=((ν 1/2[400])+(π 1/2[411])).
[h] Band(G): Configuration=((ν 1/2[400])-(π 1/2[411])).
[i] Band(H): Configuration=((ν 3/2[402])+(π 1/2[411])).
[j] Band(I): Configuration=((ν 5/2[523])+(π 1/2[411])) (1973KO06).
[k] Band(J): Configuration=((ν 3/2[402])-(π 1/2[411])).

^{169}Tm(d,t) 1973Ko06,1973Pr06



$^{168}_{69}Tm_{99}$

^{169}Tm(d,t) 1973Ko06,1973Pr06 (continued)

Band(J): Configuration=((ν 3/2[402])-(π 1/2[411]))

1^+ 1426

Band(G): Configuration=((ν 1/2[400])-(π 1/2[411]))

3^+ 1240

Band(H): Configuration=((ν 3/2[402])+(π 1/2[411]))

3^+ 1182

2^+ 1133

1^+ 1127

2^+ 1115

Band(I): Configuration=((ν 5/2[523])+(π 1/2[411])) (1973KO06)

1098

0^+ 1056

966

$^{168}_{69}Tm_{99}$