^{164}Er(^{3}He,d) 1974Ch44

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 194,460 (2024)	31-Oct-2022

1974Ch44 (also 1975Bu02): E(^{3}He)=24 MeV. Measured E(t), $\sigma(\theta)$ at 50° and 70° using 67.19% enriched targets, with thicknesses of 25 to 45 μg/cm^2 evaporated on 50 μg/cm^2 carbon backings. Deuterons were analyzed by Enge split-pole magnetic spectrograph and tracks recorded on photographic emulsion plates at McMaster University FN Tandem van de Graaff generator. FWHM=16-18 keV. Uncertainty in measured cross sections was ≈25%. DWBA analysis. The reaction Q value was measured by 1975Bu02.

^{165}Tm Levels

See (α,t) dataset for [dσ/dΩ(^{3}He,d)(50°)]/[dσ/dΩ(α,t)(60°)] ratios.

E(level)	J$^\pi$&	L†	Nuclear Structure Factor‡	Comments
0[a]	1/2$^+$	[0]		dσ/dΩ (for g.s.+12 level)=52.1 μb/sr (50°), 26.2 μb/sr (70°).
12[a] 2	3/2$^+$	[2]	0.48	Nuclear Structure Factor: for doublet 0+12 levels with L=[0+2]. dσ/dΩ (for g.s.+12 level)=52.1 μb/sr (50°), 26.2 μb/sr (70°).
81[c] 2	7/2$^+$	[4]	0.62	dσ/dΩ=14.0 μb/sr (50°), 12.4 μb/sr (70°).
130[a] 2	5/2$^+$	[2]	0.38	dσ/dΩ=48.5 μb/sr (50°), 26.6 μb/sr (70°).
161[#e] 2	7/2$^+$&1/2$^-$&7/2$^-$	[4+1+3]	1.19,0.11	dσ/dΩ=27.2 μb/sr (50°), 20.2 μb/sr (70°). Nuclear Structure Factor: 1.19 and 0.11 if the total measured cross section of the triplet is assigned to the 7/2$^+$ member of 1/2[411] band and the 1/2$^-$ member of the 1/2[541] band, respectively.
183[d] 2	5/2$^-$	[3]	0.47	dσ/dΩ=43.1 μb/sr (50°), 18.2 μb/sr (70°).
277[d] 2	3/2$^-$	[1]	0.17	dσ/dΩ=47.4 μb/sr (50°), 15.4 μb/sr (70°).
294[d] 2	9/2$^-$	[5]	0.94	dσ/dΩ=13.2 μb/sr (50°), 8.0 μb/sr (70°).
317[b] 2	5/2$^+$	[2]	1.14	dσ/dΩ=153.6 μb/sr (50°), 62.3 μb/sr (70°).
370[#e] 2	9/2$^+$&11/2$^-$	[4+5]	0.03,1.52	dσ/dΩ=30.1 μb/sr (50°), 19.8 μb/sr (70°).
452[d] 2	7/2$^-$	[3]	0.17	dσ/dΩ=19.7 μb/sr (50°), 12.3 μb/sr (70°).
≈491		(2)[@]	0.15	dσ/dΩ≈20 μb/sr (50°), ≈17 μb/sr (70°).
688 2		(2)[@]	0.15	dσ/dΩ=25.0 μb/sr (50°), 14.7 μb/sr (70°).
917 2	(1/2$^+$)	(0)[@]		dσ/dΩ=66.2 μb/sr (50°), 39.4 μb/sr (70°).
970[f] 2	11/2$^-$	[5]	1.50	dσ/dΩ=32.0 μb/sr (50°), 26.3 μb/sr (70°).
1338 2	(1/2$^+$)	(0)[@]		dσ/dΩ=72.5 μb/sr (50°), 39.9 μb/sr (70°).

† Assumed values consistent with J^π assignments from 'fingerprint method'. The (^{3}He,d)/(α,t) cross section ratios are generally consistent with these L-transfer assignments.

‡ NSF=Nuclear Structure Factor=[dσ/dΩ(exp)]/[2N((dσ/dΩ)(DWBA))], N=23. Theoretically NSF=$[\Sigma_i C^i_{jl} a_i V_i]^2$,where C^i_{jl}=coefficients to describe Nilsson orbitals in terms of spherical states, a_i=Coriolis mixing amplitudes of states with same spin, V_i=fullness factors for the target. The Nuclear Structure Factors are listed under comments; for calculated values, see tables 6 and 7 (listing all experimental data and relevant calculations) of 1974Ch44.

Complex line.

@ From [dσ/dΩ(^{3}He,d) at 50°]/[dσ/dΩ(α,t) at 60°].

& The 'fingerprint' method was used to make band assignments. According to this method, the rotational band members based on each single particle state are predicted to exhibit a unique set of cross-sections, characteristic of Nilsson coefficients (C_{jl}) for the state. All the assignments are consistent with those in the Adopted Levels.

Continued on next page (footnotes at end of table)

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^{165}Tm Levels (continued)

[a] Band(A): π1/2[411] band.
[b] Band(B): π5/2[402] band.
[c] Band(C): π7/2[404] band.
[d] Band(D): π1/2[541] band.
[e] Band(E): π7/2[523] band.
[f] Band(F): π9/2[514] band.

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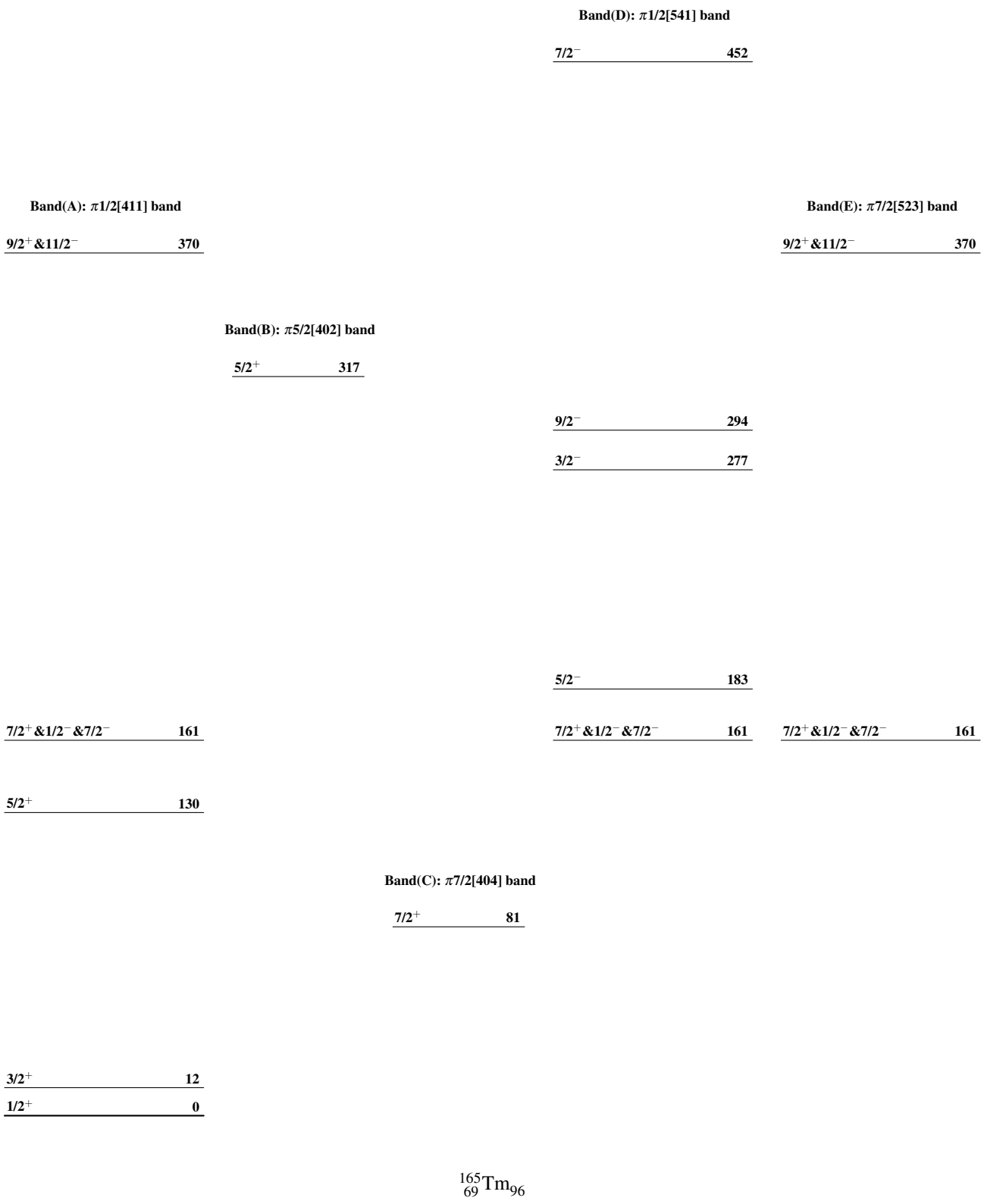

$^{165}_{69}Tm_{96}$

^{164}Er(^{3}He,d) 1974Ch44 (continued)

Band(F): π9/2[514] band

11/2$^-$	**970**

$^{165}_{69}Tm_{96}$