^{49}Ti(^{3}He,d) 1973So12,1973Sm02,1970Bi07

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh	NDS 157, 1 (2019)	15-Apr-2019

Target $J^{\pi}=7/2^{-}$.

1973So12: E(d)=22 MeV from the John H William Laboratory tandem Van de Graaff. Measured $\sigma(\theta)$ at 10°−50° with 2.5° steps with a Split-pole magnetic spectrometer (FWHM=20 keV). Deduced levels, J, π, L-transfers, spectroscopic factors from DWBA analysis. Observed states up to 4664. Uncertainties are not quoted but expected to be <10 keV.

1970Bi07: E=15 MeV beam from the University of Pennsylvania Tandem. Measured $\sigma(\theta)$ at θ(c.m.)≈10°−45° with a single-gap broad range magnetic spectrograph (FWHM<20 keV). Deduced level, J, π, L-transfers, spectroscopic factors from DWBA analysis.

1973Sm02: E=22 MeV beam from the Argonne tandem Van de Graaff. Measured $\sigma(\theta)$ at θ(c.m.)≈10°−70° with a split-pole magnetic spectrometer (FWHM=20 keV). Deduced levels, J, π, L-transfers, spectroscopic factors from DWBA analysis.

Data are from 1973So12 for E(level)<4.7 MeV and 1970Bi07 for E(level)>4.7 MeV, except as noted. 1973Sm02 note that there is a factor of two discrepancy in the absolute $\sigma(\theta)$ from their work and that of 1970Bi07.

Cross sections listed under comments are from 1970Bi07 and correspond to angles where they are maximum for listed L-transfers, at 7° for L=0 and at 25° for others. Uncertainties are 15-25%.

^{50}V Levels

E(level)	L[b]	S′[c]	Comments
0	3	0.92	S′: others: 1.10 (1970Bi07), 0.91 (1973Sm02). dσ/dΩ=0.41 mb/sr.
225 *10*	1+3	0.035+0.37	dσ/dΩ=0.40 mb/sr.
321 *10*	3	0.53	dσ/dΩ=0.34 mb/sr.
356 *10*	3	0.52	dσ/dΩ=0.28 mb/sr.
389 *10*	1+3	0.0096+0.39	dσ/dΩ=0.24 mb/sr.
832 *10*	1+3	0.014+0.25	dσ/dΩ=0.23 mb/sr.
907 *10*	3	1.4	dσ/dΩ=0.92 mb/sr.
1298 *10*	1+3	0.0066+0.15	dσ/dΩ=0.17 mb/sr.
1328 *10*	3	0.14	E(level),L,S′: 1347 *10*; L=1+3; S′=0.04+0.24 (1970Bi07). dσ/dΩ=0.37 mb/sr.
1400?‡ *10*			
1492?‡ *10*	3	0.020	
1516# *10*			
1679?‡ *10*			
1699?‡ *10*			
1754# *10*	1	0.0081	
1792# *10*	3	0.027	
1949?‡ *10*	0	0.026	
2038# *10*	0	0.0048	
2109# *10*	1	0.022	
2132?‡ *10*	1	0.0060	
2157# *10*	0	0.0050	
2308† *10*	1	0.07	dσ/dΩ=0.60 mb/sr.
2342 *10*	1	0.28	dσ/dΩ=3.95 mb/sr.
2394# *10*			
2427† *10*	0		S′: results discrepant: 0.04 (1970Bi07), 0.22 (1973Sm02). dσ/dΩ=0.49 mb/sr.
2454 *10*	1	0.20	dσ/dΩ=3.48 mb/sr.
2484# *10*	3	0.17	
2541 *10*	0		S′: results discrepant: 0.04 (1970Bi07), 0.17 (1973Sm02) and 0.032 (1973So12). dσ/dΩ=0.45 mb/sr.

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^{49}Ti(^{3}He,d) 1973So12,1973Sm02,1970Bi07 (continued)

^{50}V Levels (continued)

E(level)	L[b]	S′[c]	Comments
2595? *10*			E(level): from 1973Sm02; not reported in 1973So12 or 1970Bi07.
2657 *10*	1	0.073	dσ/dΩ=1.20 mb/sr.
2815 *10*	1	0.011	dσ/dΩ=0.04 mb/sr.
2935?‡ *10*	3	0.036	
2967 *10*	1	0.10	L,S′: E=L=1+3, S′=0.09+0.40 reported in 1970Bi07. dσ/dΩ=1.00 mb/sr.
2995 *10*	1	0.024	dσ/dΩ=0.05 mb/sr.
3101† *15*	1	0.02	dσ/dΩ=0.22 mb/sr.
3142 *10*	1	0.071	dσ/dΩ=0.20 mb/sr.
3168?‡ *10*			
3203?‡ *10*			
3223?‡ *10*			
3262# *10*	1	0.041	
3285 *10*	1	0.31	E(level): probable doublet (1970Bi07). dσ/dΩ=5.14 mb/sr.
3310?‡ *10*			
3429@ *10*	1	0.0013	dσ/dΩ=0.07 mb/sr.
3537 *10*	1	0.060	dσ/dΩ=1.31 mb/sr.
3606# *10*	2	0.023	
3658# *10*	1	0.0056	
3701& *10*	1	0.018	
3717@& *10*	3	0.056	dσ/dΩ=0.16 mb/sr.
3798?‡ *10*			
3811 *10*	1	0.063	dσ/dΩ=0.85 mb/sr.
3840?‡ *10*			
3878 *10*	1	0.033	dσ/dΩ=0.51 mb/sr.
3914# *10*	1	0.01	L,S′: from 1973Sm02; not reported by 1973So12 or 1970Bi07.
3938@ *10*	0	0.0014	dσ/dΩ=0.09 mb/sr.
3963# *10*	1	0.013	
4075 *10*	1	0.029	dσ/dΩ=0.41 mb/sr.
4116 *10*			dσ/dΩ=0.08 mb/sr.
4145 *10*	1	0.077	dσ/dΩ=1.25 mb/sr.
4195@& *10*			
4213@& *10*			dσ/dΩ=0.08 mb/sr.
4234@& *10*			
4272@& *10*			L,S′: L=1,S′=0.12 (1970Bi07). dσ/dΩ=1.34 mb/sr for 4272+4294.
4294& *10*			L,S′: L=1,S′=0.12 (1970Bi07).
4361?‡ *10*			
4396†@ *10*	1	0.05	dσ/dΩ=0.48 mb/sr.
4430†@ *10*	1	0.06	dσ/dΩ=0.72 mb/sr.
4498@& *10*			dσ/dΩ=0.10 mb/sr for doublet.
4541@& *10*			
4570@ *10*			dσ/dΩ=0.10 mb/sr.
4597@ *10*			dσ/dΩ=0.14 mb/sr.
4653† *10*	1	0.11	dσ/dΩ=1.25 mb/sr.
4774@ *15*	1	0.11	dσ/dΩ=1.18 mb/sr.
4833 *15*	1	0.12	E(level): probable doublet (1970Bi07).

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^{49}Ti(^{3}He,d) 1973So12,1973Sm02,1970Bi07 (continued)

^{50}V Levels (continued)

E(level)	L[b]	S′[c]	Comments
			dσ/dΩ=1.38 mb/sr.
4898[@] *15*			dσ/dΩ=0.23 mb/sr.
4928 *15*			dσ/dΩ=0.17 mb/sr.
5018[@] *15*			dσ/dΩ=0.08 mb/sr.
5058[a] *15*			dσ/dΩ=0.20 mb/sr.
5090[a] *15*	1	0.08	dσ/dΩ=0.88 mb/sr.
5326 *15*			dσ/dΩ=0.27 mb/sr.
5409 *15*			dσ/dΩ=0.28 mb/sr.
5531 *15*			dσ/dΩ=0.14 mb/sr.
5645 *15*			dσ/dΩ=0.24 mb/sr.
5755 *15*			dσ/dΩ=0.16 mb/sr.
5786 *15*			dσ/dΩ=0.15 mb/sr.
5820 *15*			dσ/dΩ=0.23 mb/sr.
5893 *15*			dσ/dΩ=0.26 mb/sr.
5951 *15*	1	0.06	dσ/dΩ=0.64 mb/sr.

† Level only from 1970Bi07; not reported by 1973So12.
‡ Not observed by 1973Sm02 or 1970Bi07.
# Not observed by 1970Bi07.
@ Not observed by 1973Sm02.
& Evaluators suggest that these states were not resolved in 1970Bi07.
a Evaluators suggest that this state was not resolved in 1973Sm02.
b Also from 1973Sm02.
c S′=[dσ/dΩ(exp)(2J_i+1)]/[4.4(2J_f+1)(dσ/dΩ)(DWBA)]. Values are also available in 1973Sm02.