^{99}Tc(d,t) 1976Sl06

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen, Balraj Singh	NDS 164, 1 (2020)	15-Feb-2020

$J^{\pi}(^{99}\text{Tc g.s.})=9/2^{+}$.

1976Sl06: E=15 MeV deuteron beam was produced from the injector-tandem accelerator at the University of Oxford. Target was about 200 μg/cm^2 metallic ^{99}Tc on a thin carbon backing. Reaction products were momentum-analyzed with 24 broad-range magnetic spectrographs of the Browne-Beuchner type and detected with nuclear emulsions. Measured $\sigma(\theta)$ from 26° to 169°. Deduced levels, J, π, L-transfers, spectroscopic factors from DWBA analysis. Comparisons with available data. Measured differential cross sections are accurate to within 10%. Also report data on ^{99}Tc(p,d).

All data are from 1976Sl06.

^{98}Tc Levels

Spectroscopic factor C^2S is defined by $(d\sigma/d\Omega)(\text{exp})=3.33/(2j+1)\times C^2S\times(d\sigma/d\Omega)(\text{DWBA})$, where j is the total angular momentum of transferred particle (1976Sl06).

E(level)†	L‡	C^2S‡	E(level)†	L‡	C^2S‡	E(level)†	L‡	C^2S‡
0	2	0.518	456 *5*	0	0.017	959 *5*		
20 *5*	2	0.611	541 *5*	2	0.035	1027 *5*		
68 *5*	2	0.362	616 *5*	0+2	0.032,0.048	1058 *5*	2	0.040
80 *5*	2	0.355	631 *5*	2	0.068	1073 *5*		
106 *5*	2	0.93	644 *5*	2	0.055	1108 *5*		
145 *5*	2	0.060	697 *5*	2	0.058	1134 *5*	2	0.048
202 *5*	0+2	0.027,0.068	715 *5*	0+2	0.076,0.058	1164 *5*		
269 *5*	2	0.025	757 *5*	0+2	0.023,0.057	1202 *5*		
307 *5*			775 *5*			1220 *5*	2	0.058
330 *5*	2	0.080	810 *5*	0+2	0.021,0.016	1257 *5*		
345 *5*	2	0.068	872 *5*	2	0.060	1280 *5*	0+2	0.010,0.021
391 *5*	2	0.043	898 *5*	0+2	0.013,0.027	1300 *5*		
426 *5*	0+2	0.062,0.044	932 *5*			1314 *5*	0+2	0.016,0.034

† From combined results of (p,d) and (d,t) measurements in 1976Sl06. The measurements of 1976Sl06 support with lower precision the results from 1977Em02 in (p,d) dataset. But above 400 keV, the level energies of 1976Sl06 seem to be shifted upwards by 5 to 10 keV, compared to those in 1977Em02.

‡ From DWBA analysis of measured $\sigma(\theta)$ (1976Sl06). For mixed transfers, values are for the two L-transfer, respectively.