^{124}Te(^{3}He,α) 1982Ga18,1977Fe16

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 174, 1 (2021)	15-Apr-2021

$J^{\pi}(^{124}Te\ g.s.)=0^{+}$.

1982Ga18: E=70 MeV ^{3}He beam was produced from the Michigan State University K50 Cyclotron. Target was isotopically enriched (99.5% in ^{124}Te) metallic power on a carbon backing. Reaction products were momentum-analyzed with an Enge split-pole spectrometer and detected with an E-ΔE counter telescope (FWHM≈70 keV). Measured $\sigma(E_{\alpha},\theta)$ (accurate to 10%), θ(lab)=2.5° to 30°. Deduced levels, J, π, L-transfers and spectroscopic factors from DWBA analysis. Comparisons with available data. 1982Ga18 also observed a giant resonance-like peak at 3.5-18 MeV; discussed L=4 inner-hole strength. 1982Ga18 also report data on ^{124}Te(p,d).

1977Fe16: E=19.408 MeV ^{3}He beam was produced from the 8UD Pelletron tandem accelerator of the University of Sao Paulo. Targets were 60-200 μg/cm^2 enriched metallic tellurium (96.21% in ^{124}Te) on 20 μg/cm^2 carbon backings. Reaction products were detected with four silicon surface-barrier detectors (FWHM=45 keV). Measured $\sigma(E_{\alpha},\theta)$, θ=25°−95°. Deduced levels, J, π, L-transfers, spectroscopic factors from DWBA analysis. Comparisons with available data.

Other: 1997BoZW (E=32 MeV).

^{123}Te Levels

Spectroscopic factor C^2S is obtained from $d\sigma/d\Omega(exp)=N\times C^2S/(2j+1)\times d\sigma/d\Omega(DWBA)$, where N=21.3 is the normalization factor for (^{3}He,α) and j the total angular momentum of the transferred neutron (1977Fe16).

E(level)†	L‡	C^2S‡	E(level)†	L‡	C^2S‡	E(level)†	L‡	C^2S‡	E(level)†	L‡	C^2S‡
0.0@	0	1.22@	690@ *10*	4	0.76@	1059 *10*	2		1850@ *20*	(2)	0.34@
160@ *10*	2	1.70@	712 *10*	2		1232 *10*	4#	0.87 *9*	2066 *25*	4	0.30 *3*
252 *10*	5	3.3 *3*	790@ *10*		@	1427 *10*	4#	0.5 *1*	2340 *25*	4	0.49 *5*
498 *10*	4	2.9 *3*	906 *10*	2	1.80 *20*	1660 *10*	4	0.68 *7*	2670 *25*	4	0.38 *4*

† From 1982Ga18, unless noted otherwise.
‡ From DWBA analysis of experimental differential cross sections, assuming $3s_{1/2}$, $2d_{3/2}$ (only for 160 level) and $2d_{5/2}$,$1g_{7/2}$, $1h_{11/2}$ single-particle orbits for L=0, 2, 4, 5 transfer, respectively (1982Ga18). Quoted values are from 1982Ga18, unless otherwise noted.
# L=4+2 in 1977Fe16.
@ From 1977Fe16.