^{13}C(t,^{3}He) 2009Gu23

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. H. Kelley, C. G. Sheu and J. E. Purcell	NDS 198,1 (2024)	1-Aug-2024

1998Da05: ^{13}C(t,^{3}He) E=127 MeV/nucleon. Measured dσ/dΩ(0°) at MSU/NSCL using the A1200 as a dispersion-matched energy-loss spectrometer. Measured ^{3}He energy spectrum at θ=0°. Analyzed σ relation with B(GT).

See also (2011Pe12) who analyzed the cross section to $^{13}B_{g.s.}$ and the relationship to B(GT).

2009Gu23: XUNDL dataset compiled by TUNL (2009).

Measured ^{13}C(t,^{3}He) at E_t=115 MeV/nucleon using a 99.3% enriched $^{13}CH_2$ target at the object position of the S800 spectrometer. Measured ^{3}He particles with plastic scintillators and time-of-flight to identify particles. FWHM=480 keV. Measured $\sigma(\theta)$ for dipole transitions up to E_x=20 MeV. Deduced Gamow-Teller strengths. 10% systematic uncertainty. DWBA calculations. Used COSY to reconstruct (non)dispersive angles, position and momentum.

^{13}B Levels

E(level)[†]	J$^{\pi}$[†]	ΔL[†‡]	dσ/dΩ (mb/sr)[†#]	Comments
0	3/2^{-}	0,2	13.1 *13*	B(GT)=0.711 *2*; calculated from relevant β-decay log *ft* value. Unit $\sigma(\theta$=0)=22.8 mb/sr *23*.
3.6×10^{3}	3/2^{-}	0,1	1.07 *9*	E(level): Unresolved multiplet. B(GT)=0.065 *5*; error calculated from the square root of the sum squared of 0.07 mb/sr statistical error and 0.05 mb/sr systematic error.
5.2×10^{3}[@]	(3/2^{+},5/2^{+})	1		
7×10^{3}[@]	(3/2^{+},5/2^{+})	1		
10×10^{3}[@]	(3/2^{+},5/2^{+})	1		

[†] From DWBA analysis in (2009Gu23). In (1998Da05), broad unresolved groups at E_x=3.9, 4.7 and 6.2 MeV are shown in Fig. 1.

[‡] Transferred from the J$^{\pi}$=1/2^{-} $^{13}C_{g.s.}$

[#] θ=0°, L=0.

[@] J^{π} values are not assigned in the Adopted Levels based on these broad, poorly constrained groups.