$^{12}C(^{3}He,d)$

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

1960Hi07: $^{12}C(^{3}He,d_0)$ E=5.98-10.14 MeV; measured angular distributions and excitation function; θ=10° to 125°.
1960Pr12: $^{12}C(^{3}He,d_0)$ E=13.9 MeV; measured $\sigma(\theta)$ for θ=10° to 150°.
1960We04: $^{12}C(^{3}He,d)$ E=21,25 MeV; measured angular distributions of $^{13}N^{*}$(0, 2.36, 3.50, 3.54) for θ=5° to 170°. Deduced L.
1967Ha21: $^{12}C(^{3}He,d)$ E=24.8 MeV; measured $\sigma(\theta)$ for recoil ^{13}N nuclei, θ=10° to 40°.
1969Fo02: $^{12}C(^{3}He,d0,1,2+3,4,5,6,7)$ E=12−19 MeV; measured $\sigma(E,E_d,\theta)$ for θ=10° to 170°. Deduced level energies, J^{π}, Γ, θ^2_p.
1970Si15: $^{12}C(^{3}He,d)$ E=6.5-30.6 MeV; measured $\sigma(E)$, failed to observe significant structure in the excitation function.
1971St21: $^{12}C(^{3}He,d_{0,2+3})$ E=40 MeV; measured $\sigma(\theta)$ for θ=5° to 40°.
1974Bl06: $^{12}C(^{3}He,d)$ E=12-15 MeV; measured $\sigma(E,E_d,\theta)$ for θ=60°, 90° and 120°. Deduced resonance widths.
1976Ka23: $^{12}C(vec\ ^{3}He,d)$ E=33.3 MeV; measured $\sigma(\theta)$, A(θ). for θ=10° to 90°. Deduced ground state deduced S=0.68.
1976Ko36: $^{13}C(^{3}He,d_{0,1,2+3})$ E=81.4 MeV; measured $\sigma(E_d,\theta)$ for θ=5° to 70°. Deduced levels, optical model parameters.
1977Bo30: $^{12}C(^{3}He,d)$ E=8.8-14 MeV; analyzed $\sigma(\theta)$, deduced ground state S.
1978Ma42: $^{12}C(^{3}He,d)$ E=70 and 90 MeV; measured $\sigma(E_d,\theta$=13°).
1979Fu03: $^{12}C(^{3}He,d)$ E=36.0 MeV; measured $\sigma(E_d,\theta)$ for θ=7° to 20°, deduced reaction mechanism, level energies.
1979Se07: $^{12}C(^{3}He,d)$ E≈25.4 MeV analyzed $\sigma(\theta)$ for θ=0° to 50°. Deduced S for lowest four states.
1980Pe13: $^{12}C(^{3}He,d)$ E=43.6 MeV; measured $\sigma(E_d,\theta)$. for θ=0° to 80°. Deduced reaction mechanism, J, π, S. 2-step DWBA model analysis.
1982Co20: $^{12}C(^{3}He,d)$ E=36 MeV, calculated $\sigma(E_d)$, DWBA.
1983Ca07: $^{12}C(^{3}He,d)$ E=13 MeV; measured $\sigma(E_d,\theta)$ for θ=4.8 to 12°. Analyzed continuum region.
1983Mu13: $^{12}C(d,n)$, $(^{3}He,d)$ analyzed data.
1984Ca06: $^{12}C(^{3}He,d)$ E=13 MeV; measured $\sigma(\theta)$ for θ=10° to 170° deduced levels, S. DWBA analysis.
1989Li06: $^{12}C(^{3}He,d)$ E=0.4-14 MeV; measured $\sigma(E)$, activation.
1995Da08, 1995Da21: $^{12}C(^{3}He,d)$ E=90, 98 MeV; measured $\sigma(\theta)$ for θ≈20°−60°. Analyzed nuclear-rainbow effects.
1996Ar07: $^{12}C(^{3}He,d)$ E=22.3-34 MeV; measured $\sigma(E_d,\theta)$. at forward angles. DWBA analysis; deduced S, reaction mechanism.
1997Ya06: $^{12}C(^{3}He,d)$ E=34 MeV; analyzed 3-body Coulomb effects in proton transfer. Deduced nuclear vertex constant.
2002Ar22: $^{12}C(^{3}He,d)$ E=22.3 MeV; measured $\sigma(\theta)$. Analyzed 3-particle Coulomb effects. Deduced nuclear vertex constants.
2022Ko25: $^{12}C(^{3}He,d)$ E=81.4 MeV; calculated $\sigma(E_d,\theta)$ using eikonal approximation and folding model. Compared results with (1976Ko36).

^{13}N Levels

E(level)†	J^{π}†	Γ	L	S†	Comments
0#@	$1/2^{-}$@		1‡	0.48	S: See also S=0.81 (1979Se07) and S=0.76-1.13 (1984Ca06).
2368.2#@ *28*	$1/2^{+}$@	36.1 keV *28*	0‡	0.14	E(level),Γ: From (1974Bl06). S: See also S=0.23 (1979Se07) and S=0.28-0.66 (1984Ca06).
3507.8# *76*	$3/2^{-}$	55 keV *12*			E(level),Γ: From (1974Bl06). S: See S=(0.69) (1979Se07) and S=0.05-0.08 (1984Ca06).
3549.1#@ *50*	$5/2^{+}$@	46.5 keV *71*		0.53	E(level),Γ: From (1974Bl06). S: See also S=(1.76) (1979Se07) and S=0.34-0.58 (1984Ca06).
6.36×10^{3}#&	$5/2^{+}$			0.007	
6.89×10^{3}#&	$3/2^{+}$			0.015	
7.16×10^{3}#&	$7/2^{+}$			<0.009	J^{π}: See $J^{\pi}=1/2^{+}$ in (1969Fo02).
7.38×10^{3}#&	$5/2^{-}$			0.024	
8.0×10^{3}@	$3/2^{+}$@			0.13	E(level): Not seen in (1969Fo02).
8.92×10^{3}#	$1/2^{-}$			<0.005	
9.0×10^{3}	$9/2^{+}$	400 keV *50*		<0.005	Γ: From (1969Fo02).
9.48×10^{3}	$3/2^{-}$			<0.002	

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^{12}C(^{3}He,d) (continued)

^{13}N Levels (continued)

E(level)[†]	Jπ[†]	Γ	S[†]	Comments
10.36×10^3[@]	(5/2$^-$,7/2$^-$)[@]		<0.001	
10.78×10^3	1/2$^-$	75 keV *15*	0.064	Γ: From (1980Pe13).
11.1×10^3[@]	(5/2$^-$)[@]			
12.08×10^3[@]	(7/2$^-$)[@]			

† From DWBA analysis of spectroscopic factors in (1980Pe13) unless indicated otherwise.
‡ From (1960We04).
# Reported in (1969Fo02).
@ Reported in (1976Ko36).
& Reported in (1979Fu03).