^{14}N(d,^{3}He)

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

1968Ga13: ^{14}N(d,^{3}He) E=28 MeV; measured $\sigma(\theta)$ to g.s; DWBA analysis for comparison of (d,^{3}He),(d,t) cross sections.
1968Hi01: ^{14}N(d,^{3}He) E=52 MeV; measured σ(E(^{3}He),θ), ^{13}C deduced levels, J, π, S. Natural targets.
1970PiZV: ^{14}N(d,^{3}He) E=20.13 MeV; measured $\sigma(\theta)$; deduced optical model parameters.
1974Lu06: ^{14}N(pol. d,^{3}He) E=15 MeV; measured σ(E(^{3}He),θ), A(θ). ^{13}C g.s. deduced S, J-dependence, J-admixtures. DWBA analysis. Natural, enriched targets.
1981Ma14: ^{14}N(pol. d,^{3}He) E=52 MeV; measured iT$_{11}$(E(^{3}He),θ) for ^{13}C*(0,7.55 MeV). Enriched targets. DWBA, Nilsson model analyses.

^{13}C Levels

E(level)	J$^{\pi}$[†]	C^{2}S	Comments
0[‡]	1/2^{-}	0.63	L=1 (1974Lu06).
3.09×10^{3}[#]			
3.68×10^{3}	3/2^{-}	0.16	E(level): The 3.85 MeV; J$^{\pi}$=5/2^{+} state is not resolved from the 3.68 MeV state, but it is reasonable to assume only a small contribution to the 3.7 MeV group with regard to the weak excitation of the other positive-parity states (1968Hi01).
6.87×10^{3}[#]		1.55	
7.55×10^{3}	5/2^{-}	0.63	
8.85×10^{3}	1/2^{-}		The sum of the cross section of the ^{13}C*(8.85+9.51) states is identical with the angular distribution of the unresolved states that appear at ^{13}N*(9.2).
9.51×10^{3}	(3/2^{-})	0.13	J$^{\pi}$: 9/2^{+} is accepted in the Adopted Levels. J$^{\pi}$: In (1968Hi01), the known ^{13}N*(8.9+9.4 MeV) states are unresolved, but their angular distributions and cross section sum are compared with the resolved ^{13}C*(8.9+9.5 MeV) states. The authors first indicate the ^{13}C*(9.5 MeV) state does not have a "pick-up pattern" as would be expected, and later they suggest a complex configuration that can explain the spectroscopic factor. The discussion shows reservations, and their conclusions are based on comparison with an unresolved group of states in ^{13}N.
11.90×10^{3} *15*	3/2^{-}	0.95	

[†] From comparison of (d,^{3}He) and (d,t) mirror states in (1968Hi01) ΔE≈100 keV. C^{2}S is from Figure 7 of (1968Hi01).
[‡] See also (1974Lu06). The spectroscopic factors, C^{2}S, extracted for the reaction ^{14}N(d,^{3}He)^{13}C$_{g.s.}$ agree within 5% to those for the reaction ^{14}N(d,t)^{13}N$_{g.s.}$.
[#] Weakly populated.