

$^{15}\text{N}(\text{p}, ^3\text{He})$ 1968FI03

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

[1964Ce03,1966Ce02](#): $^{15}\text{N}(\text{p}, ^3\text{He})$ E=43.7 MeV; experiments were performed at the Berkeley 88-inch cyclotron. Emitted ^3He particles from a pure ^{15}N gas target were simultaneously detected by a (dE/dx)-E counter telescope which fed a particle identifier. The typical resolution (FWHM) is 150 keV.

[1968FI03](#): A 43.7-Mev proton beam has been used to induce (p,t) and (p, ^3He) reactions on a ^{15}N target. Transitions to mirror final states of ^{13}N and ^{13}C have been investigated over 15 MeV of excitation and several new spin and parity assignments have been made. The DWBA predictions of angular distributions for these $^{15}\text{N}(\text{p},\text{t})^{13}\text{N}$ and $^{15}\text{N}(\text{p}, ^3\text{He})^{13}\text{C}$ reactions were generally found to reproduce experiment well. See also ([1968FI02](#)).

[1970Ha23](#): $^{15}\text{N}(\text{pol. p}, ^3\text{He})$ E=44 MeV; measured $\sigma(\theta)$, analyzing power(θ). ^{13}C transitions deduced L.

[1974Ma12,1973MaZH](#): $^{15}\text{N}(\text{p}, ^3\text{He})$ E=43.8 MeV; measured $\sigma(\text{E}(^3\text{He}), \theta)$, A(θ). Analyzed $^{13}\text{C}^*(0,3.68,7.55,15.1)$, L.

[1974Pi05](#): $^{15}\text{N}(\text{p}, ^3\text{He})$ E=20-45 MeV; measured $\sigma(\text{E}(^3\text{He}), \theta)$, deduced optical model parameters. ^{13}C levels deduced L, J, π .

[1975Mi01](#): $^{15}\text{N}(\text{p}, ^3\text{He})$ E=26.8-43.1 MeV; measured $\sigma(\text{E}(^3\text{He}), \theta)$.

[1982RaZU](#): $^{15}\text{N}(\text{p}, ^3\text{He})$ E=45 MeV; measured $\sigma(\theta)$.

 ^{13}C Levels

E(level) [†]	J π [†]	L ^{†#}	Comments
0	1/2 ⁻	0,2	E(level): Also reported in (1964Ce03 , 1966Ce02 , 1974Ma12 , 1974Pi05 , 1975Mi01 , 1982RaZU).
3080 ²⁰	1/2 ⁺		
3680 [‡] 10	3/2 ⁻	0,2	E(level): Also reported in (1964Ce03 , 1966Ce02 , 1974Ma12 , 1974Pi05 , 1975Mi01 , 1982RaZU , 1970Ha23). Reported as a doublet by (1974Pi05); the 3.68 MeV gives the dominant contribution, see (1968FI03).
6870 [‡] 15	5/2 ⁺		
7550 ²⁰	5/2 ⁻	2	E(level): Also reported in (1964Ce03 , 1966Ce02 , 1974Ma12 , 1974Pi05 , 1975Mi01 , 1982RaZU , 1970Ha23).
8860 [@] 60	1/2 ⁻	0,2	
9520 [@] 30	(3/2 ⁻)	2	J π : 9/2 ⁺ in Adopted Levels. Note: the authors were somewhat “puzzled” by the absence of the ^{13}N mirror in the (p,t) reaction and by this state’s appreciable cross section.
10750	7/2 ⁻		E(level), J π : From (1982RaZU).
11090 ⁵⁰	(1/2 ⁻)	0,2	
11800 [@] 30	(3/2 ⁻)	0,2	
12400 [@] 50	7/2 ⁻	2	
15110 [‡] 20	3/2 ⁻	2	T=3/2 (1968FI03) E(level): See also E _x =15103 keV 45 (1964Ce05 , 1966Ce02). E(level): Also reported in (1974Ma12 , 1982RaZU).

[†] From DWBA analysis of (p, ^3He) and (p,t) mirror partners and comparison of related differential cross sections ([1968FI03](#)).

[‡] Considered known E_x in the energy analysis ([1968FI03](#)).

[#] From ([1968FI03,1974Ma12](#)).

[@] Also reported in ([1982RaZU](#)).