$^{14}C(^{14}C,^{12}N)$ 1995Bo10,2000Ka21

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. H. Kelley, G. C. Sheu	ENSDF	16-Jan-2016

1995Bo10, 2000Ka21:

The authors used ≈335 MeV beams of ^{14}C to study multi-nucleon transfer reactions on a variety of targets at the Hahn-Meitner-Institut. In the present case, a 336 MeV ^{14}C beam impinged on a ^{14}C target. The reaction products are momentum analyzed and identified in the focal plane of a Q3D magnetic spectrometer with an energy resolution near 600 keV.

Along with several $^{12}C(^{14}C,^{12}N)^{14}C$ contaminant peaks in the spectrum, three peaks in the spectrum are attributed to ^{16}B states. A state presumed to be the ^{16}B ground state is observed with a mass excess of ΔM=37.08 MeV *6*; extraction of its parameters is complicated because it falls between the $^{14}C^*(8.03,10.15)$ states produced by ^{12}C impurities in the target. The ΔM= 37.08 MeV *6* corresponds to ^{16}B being bound by S_n=40 keV *60*. This results is consistent with the unlikely case that ^{16}C could be bound by as little as 20 keV. The authors suggest the valence neutron occupies a $1d_{5/2}$ orbital, which could yield a relatively long lifetime, even if ^{16}B is particle unstable. Two additional states are identified at $^{16}B^*(2.36,6.06)$. See also (1999Ka67).

^{16}B Levels

E(level)	J^π	$T_{1/2}$	Comments
0.0	$(4,3,1,2)^-$	<100 keV	The authors suggest ΔM= 37.08 MeV *6*, which implies S_n=40 keV *60*. J^π: Shell model arguments are used to suggest spin/parity values. The authors suggest a tentative $J^\pi=(4^-)$ value based on various expectations.
2.36×10^3 *7*		≈150 keV	
6.06×10^3? *8*			