^{9}Be(^{22}N,^{19}C) 2013Th06

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. H. Kelley, G. C. Sheu	ENSDF	23-March-2017

1995Oz02: ^{9}Be(^{22}N,^{19}C) was used to produce ^{19}C. The beam was implanted in a plastic scintillator and β-delayed neutrons were measured corresponding to three neutron decay transitions. Analysis of the decay rate gives the lifetime $T_{1/2}$=45.5 ms *40*. In total, eight neutron groups were observed in the neutron energy spectrum, three from ^{19}C and five from ^{19}N delayed neutrons and other beam contaminants. The total P_{1n}=(47 *3*)%. Shell model calculations used by the authors predict $J^{\pi}=1/2^{+}$, but $3/2^{+}$ and $5/2^{+}$ states were predicted nearby and could not be ruled out.

2013Th06: Neutron decay spectroscopy was used to analyze the ^{18}C+n pairs produced when a ^{22}N beam was fragmented on a target.

A beam of 68 MeV/nucleon ^{22}N ions, produced by fragmenting a ^{48}Ca beam on a thick ^{9}Be target at the NSCL, impinged on a 481 mg/cm^2 ^{9}Be reaction target. The resulting ^{18}C+n products were momentum analyzed using both a large-gap superconducting dipole magnet and the MoNA array.

A single resonance is observed with E_{rel}=76 keV *14* and $\Gamma\leq$100 keV; this corresponds to E_x=653 keV *95*. The width was dominated by the ≈100 keV experimental resolution.

Significant discussion on the spin-parity of the state is given. Results from prior measurements are given as support for assuming $J^{\pi}=5/2^{+}$ (2011Oz01,2012Ko38), and for removing the previously suggested $J^{\pi}=5/2^{+}$ assignment from the E_x=270 keV resonance reported in (2005El07). Particular comments are given to explain the present lack of sensitivity to the E_x=1.46 MeV, $J^{\pi}=5/2$ state observed in 2008Sa03.

^{19}C Levels

E(level)	J^{π}	Γ	Comments
0	$(1/2^{+},3/2^{+})$	45.5 ms *40*	J^{π}: from shell model predictions (1995Oz02).
653 *95*	$(5/2^{+})$	<100 keV	E(level): deduced from E(^{18}C+n)=76 keV *14* and S(n)=577 keV *94* (from http://amdc.in2p3.fr/masstables/Ame2003/rct2.mas03). Rounded value of S(n) is 580 keV *90* in published 2012Wa38.