$^{1}H(^{14}Be,^{12}Li)$ 2008Ak03

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. H. Kelley, J. E. Purcell and C. G. Sheu	NP A968, 71 (2017)	1-Jan-2017

2008Ak03: First observation of the ^{12}Li nuclide.

The experiment was performed at the ALADIN-LAND facility at GSI. A beam of ^{14}Be was produced by fragmenting a 360 MeV/nucleon ^{18}O beam and selecting the 304 MeV/nucleon ^{14}Be beam using the FRS fragment separator. The beam impinged on a liquid-hydrogen target placed in front of the ALADIN large-gap dipole magnetic spectrometer and LAND large area neutron detector array. The relative n+^{11}Li center of mass energies were reconstructed from the measured momenta. A scattering length of a_s=−13.7 fm *16* was deduced, which corresponds to E_{res}=120 keV *15* (2010Ha04).

In (2013Ko03), it is suggested that ^{13}Li→^{11}Li+2n events contaminated the analysis. In a reanalysis of the (2008Ak03) data by (2013Ko03) a_s>−4 fm is deduced. This interpretation is not adopted.

^{12}Li Levels

E(level)	J^{π}	$E_{res}(^{11}Li+n)$ (keV)	Comments
0	$(1^-,2^-)$	120 *15*	%n=100 S(n)(^{12}Li)=−120 keV *15* (from (2010Ha04) analysis of a_s=−13.7). J^{π}: Interpreted as s-state with a scattering length of −13.7 fm *16*, which implies $J^{\pi}=1^-,2^-$, since $J^{\pi}=3/2^-$ for core nucleus ^{11}Li. This assignment contradicts $J^{\pi}=4^-$ predicted from shell-model calculations by (1985Po10).