

$^9\text{Be}(^{17}\text{B}, ^{16}\text{Be})$ 2012Sp01

Type	History		Literature Cutoff Date
	Author	Citation	
Full Evaluation	J. Kelley	ENSDF	29-Sept-2014

[2012Sp01](#): The authors populated the ground state of ^{16}Be by fragmenting ^{17}B nuclei, and then studied ^{16}Be decay by measuring complete $^{14}\text{Be}+2\text{n}$ kinematics. The aim was to determine the ^{16}Be mass and evaluate n-n correlations in search of dineutron decay. The ^{16}Be nuclei were formed in two steps: first an $E(^{22}\text{Ne})=120$ MeV/nucleon beam was fragmented in a 2938 mg/cm^2 Be target to produce ^{17}B beam that were purified in the A1900 at the MSU/NSCL, second the ^{17}B beam at 53 MeV/nucleon impinged on a 470 mg/cm^2 ^9Be target where the ^{16}Be nuclei were formed by fragmentation.

The ^{16}Be nuclei decayed in flight and the residual $^{14}\text{Be}+2\text{n}$ were momentum analyzed in the 43° Sweeper dipole magnet and the MONA array. Kinematic energy reconstruction indicated the unbound ^{16}Be ground state is at $E_{\text{rel}}(^{14}\text{Be}+2\text{n})=1.35\text{ MeV}$ *10*. Further analysis of the $^{14}\text{Be}+\text{n}$ and $\text{n}+\text{n}$ energy and angular correlations are consistent with dineutron emission from ^{16}Be , and are inconsistent with either sequential decay through ^{15}Be or simultaneous 3-body breakup into the $^{14}\text{Be}+\text{n}+\text{n}$ continuum. See also [\(2013Th04\)](#).

 ^{16}Be Levels

E(level)	J^π	Γ	Comments
0	0^+	0.8 MeV 2	$\%n \approx 100$ E(level): The ground state is unbound to 2n decay by 1.35 MeV <i>10</i> . Decay is dominated by dineutron emission. Γ : From $\Gamma=0.8\text{ MeV}$ $+1-2$.