Adopted Levels

Q(β^-)=20.34×10^3 *17*; S(n)=0.44×10^3 *20*; 2012Wa38
See general theoretical analysis of the ^{16}Be binding energy in 1981Se06, 1985Po10, 1987Sa15, 2006Ko02, 2008Um02, 2009Yu07, 2012It04).

^{16}Be Levels

Cross Reference (XREF) Flags

A ^{9}Be(^{17}B,^{16}Be)
B ^{9}Be(^{40}Ar,^{16}Be)

E(level)	J^π	Γ	XREF	Comments
0	0^+	0.8 MeV *2*	A	%n≈100 E(level): The ground state is unbound to 2n decay by 1.35 MeV *10*. Decay is dominated by dineutron emission. Γ: From Γ=0.8 MeV *+1−2*.

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

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}Be+2n 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}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 ^{9}Be target where the ^{16}Be nuclei were formed by fragmentation.

The ^{16}Be nuclei decayed in flight and the residual ^{14}Be+2n 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_{rel}(^{14}Be+2n)=1.35 MeV *10*. Further analysis of the ^{14}Be+n and n+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}Be+n+n continuum. See also (2013Th04).

^{16}Be Levels

E(level)	J^π	Γ	Comments
0	0^+	0.8 MeV *2*	%n≈100 E(level): The ground state is unbound to 2n decay by 1.35 MeV *10*. Decay is dominated by dineutron emission. Γ: From Γ=0.8 MeV *+1−2*.

^{9}Be(^{40}Ar,^{16}Be) 2003Ba47

2003Ba47: The authors analyzed the ^{40}Ar+^{9}Be fragmentation products in search of evidence for particle bound states in ^{16}Be.

A beam of 140 MeV/nucleon ^{40}Ar ions, from the NSCL coupled cyclotron facility, impinged on a 1.5 g/cm^{2} ^{nat}Be target. The resulting fragmentation products were momentum analyzed using the A1900 fragment separator. The products were detected using a position sensitive PPAC, a 500 μm thick Si ΔE detector and a stopping thickness plastic E scintillator that were located at the final focal plane of the device. The time difference between a thin plastic scintillator located at the intermediate image of the separator and the thick stopping detector were compared to determine the the time-of-flight (ToF) between the two image planes. The particle identification at the focal plane was determined using both ΔE-E and ΔE-ToF techniques.

No events corresponding to ^{16}Be were observed. By comparison, ^{6,8}He, ^{9,11}Li, ^{12,14}Be, ^{17,19}B and ^{20}C nuclides were observed at the focal plane. The measured intensity of ^{19}B was expected to be an order of magnitude lower than that of ^{16}Be. As a result, the authors conclude ^{16}Be is unbound. See also (2004Th15).

REFERENCES FOR A=16

1981SE06	M.Seya, M.Kohno, S.Nagata - Prog.Theor.Phys.(Kyoto) 65, 204 (1981).
1985PO10	N.A.F.M.Poppelier, L.D.Wood, P.W.M.Glaudemans - Phys.Lett. 157B, 120 (1985).
1987SA15	H.Sagawa, H.Toki - J.Phys.(London) G13, 453 (1987).
2003BA47	T.Baumann, N.Frank, B.A.Luther et al. - Phys.Rev. C 67, 061303 (2003).
2004TH15	M.Thoennessen - Acta Phys.Hung.N.S. 21, 379 (2004).
2006KO02	V.B.Kopeliovich, A.M.Shunderuk, G.K.Matushko - Phys.Atomic Nuclei 69, 120 (2006).
2008UM02	A.Umeya, G.Kaneko, T.Haneda et al. - Phys.Rev. C 77, 044301 (2008).
2009YU07	C.-X.Yuan, C.Qi, F.-R.Xu - Chin.Phys.C 33, Supplement 1, 55 (2009).
2012IT04	M.Ito - Prog.Theor.Phys.(Kyoto), Suppl. 196, 289 (2012).
2012SP01	A.Spyrou, Z.Kohley, T.Baumann et al. - Phys.Rev.Lett. 108, 102501 (2012).
2012WA38	M.Wang, G.Audi, A.H.Wapstra et al. - Chin.Phys.C 36, 1603 (2012).
2013TH04	M.Thoennessen, Z.Kohley, A.Spyrou et al. - Acta Phys.Pol. B44, 543 (2013).