Adopted Levels

Q(β^-)=20.86×10^3 *10*; S(n)=−1.80×10^3 *16*; 2012Wa38,2013Sn02

Values computed using ΔM=49821 keV *100* from 2013Sn02. This value compares with ΔM=49760 keV *400*, which was estimated in 2012Wa38.

Theoretical works:

2006Ko02: A chiral soliton model with a ≈ 30% rescaling of the Skyrme constant is used to estimate the mass excess of A=6 to 32 nuclides Also see calculations in (1987Sa15, 1985Po10, 1981Se06).

2015FO04: Shell model analysis of ^{15}Be with an emphasis on evaluating the s- and d-shell single particle energies.

^{15}Be Levels

Cross Reference (XREF) Flags

A ^{2}H(^{14}Be,^{15}Be)
B ^{9}Be(^{17}C,^{15}Be2p)

E(level)	J$^\pi$	Γ	XREF	Comments
0	(5/2$^+$)	0.58 MeV *20*	A	%n≈100 Observed in the ^{14}Be$_{g.s.}$+n relative energy spectrum at E$_{rel}$=1.8 MeV *1*. In this case the mass excess is ΔM=49821 keV *100*. J$^\pi$,Γ: from 2013Sn02.

^{2}H(^{14}Be,^{15}Be) 2013Sn02

The authors populated a state in the neutron unbound ^{15}Be nucleus and measured its decay energy. This constitutes the first positive observation of any level in ^{15}Be.

An E(^{14}Be)=59 MeV/nucleon beam, produced by fragmentation of a ^{18}O beam on a ^{9}Be target, impinged on a 435 mg/cm^2 deuterated polyethylene target. The produced ^{15}Be nuclei decayed in the target; levels decaying to the ^{14}Be ground state were characterized by measurement of the neutron momentum (in the MoNA array) and the ^{14}Be momentum (in the focal plane detectors of a large-gap dipole magnet). Neutrons and ^{14}Be particles were detected in coincidence mode. The kinematic reconstruction of the ^{14}Be+n relative energy yields a broad resonance at E_{res}=1.8 MeV *1* with Γ=575 keV *200*. This level is identified as the lowest Jπ=5/2$^+$ state of ^{15}Be.

Two states are predicted in the low-energy region of ^{15}Be; one with Jπ=3/2$^+$ and another with Jπ=5/2$^+$. The Jπ=3/2$^+$ state is unbound by at least 1.54 MeV (2011Sp01) and is expected to decay to the Jπ=2$^+$ first excited state of ^{14}Be, which decays via ^{14}Be* –> ^{13}Be+n –> ^{12}Be+2n. Observation of the Jπ=3/2$^+$ state will be difficult.

The predicted order of the Jπ=3/2$^+$ and 5/2$^+$ states is controversial. The present Jπ=5/2$^+$ state is accepted as the ground state since it is the only level observed experimentally.

^{15}Be Levels

E(level)	J$^\pi$	Γ	Comments
0	(5/2$^+$)	0.58 MeV *20*	%n≈100 Observed in the $^{14}Be_{g.s.}$+n relative energy spectrum at E_{rel}=1.8 MeV *1*.

^{9}Be(^{17}C,^{15}Be2p) 2011Sp01

The present work was motivated by a study of the $^{16}Be_{g.s.}$ decay mechanism, which could be expected to 1-n or 2-n decay, depending on the ^{15}Be mass.

A beam of 55 MeV/A ^{17}C ions impinged on a 470 mg/cm^2 ^{9}Be target at the NSCL MoNA/Sweeper dipole magnet target position. Following 2p removal events in the ^{9}Be target, the experiment was configured to measure the momenta of ^{14}Be ions using the sweeper dipole magnet and the momenta of neutrons using the MoNA neutron array. No peaks were observed in the kinematic reconstruction of ^{14}Be + neutron events. The authors discuss the possible case where ^{15}Be decays to the ^{14}Be*(1.54 MeV) state, which is known to decay to ^{12}Be+2n. However, the statistics were not sufficient to analyze the ^{12}Be+3n events. It is suggested that ^{15}Be must be unbound by 1.54 MeV for this decay to occur.

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