Adopted Levels 2011Gr13

The nucleus ^{18}Be is unbound to neutron and multi-neutron decay; it has not been experimentally observed.

A theoretical model developed in 2011Gr13 in suggests ^{18}Be is a candidate for "true" 4n decay. Within the article they suggest 2n- and 4n-decay may provide a manifestation of neutron radioactivity that is analogous to 2-proton decay. They develop a model for estimating resonance widths where the effective few-body "centrifugal barrier" increases rapidly as the number of emitted particles increases. The resonance lifetime depends mainly on the configuration and decay energy of the valence neutrons.

The authors suggest using a 1-proton knockout reaction from ^{19}B as a means of populating ^{18}Be, which can then be studied using in-flight decay spectroscopy, for example ^{1}H(^{19}B,^{18}Be –> 4n+^{14}Be).

Also see (2009Yu07) who evaluate the N=14 and 16 shell closures. They find N=14 shell closure has disappeared in Be and C isotopes, but that it persists in O and Ne isotopes. Also see (2006Ko02) who predict the ^{18}Be binding energy.

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