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Nuclear Structure Experiments Beyond the Neutron Dripline

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In order to measure properties of nuclei with the most extreme neutron to proton ratios, it is necessary to develop techniques to study nuclei beyond the driplines. For the neutron dripline these nuclei are currently accessible up to fluorine. Several laboratories around the world have the capability to produces nuclei beyond the dripline and measure their decay. This typically involves the reconstruction of the invariant mass spectrum which requires coincidence measurement of the neutrons around zero degrees with the charged fragments (deflected away from zero degrees with a bending magnet).

Recent results of single neutron emitters include ^{12}Li, ^{15}Be, ^{21}C, ^{25}O, and ^{28}F. In addition, interesting results have also been achieved for the two-neutron emitters ^{10}He, ^{13}Li, ^{16}Be, and ^{26}O. In ^{16}Be the decay of a “di-neutron” like configuration was proposed and in ^{26}O first indications for two-neutron radioactivity were observed.