Explorations of the Driplines and First Results from MoNA *

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The limits of nuclear stability have not been reached for most elements. Only for the lightest elements are the minimum and maximum number of neutrons necessary to form an isotope for a given element known. Properties for nuclei at and beyond the dripline can be studied from the reconstruction of their decay products.

At the Coupled Cyclotron Facility (CCF) of the NSCL these nuclei can be produced from knockout reactions of secondary beams. The charged fragments are detected and identified using the MSU/FSU sweeper magnet while the neutrons were detected by the Modular Neutron Array (MoNA). The decay energies and widths of unbound ground- and excited states can be reconstructed from the measured energies and angles of the fragments and the neutrons.

The first experiments of MoNA and the sweeper magnet included the measurement of the spectroscopic factor for the neutron knockout reaction of a ^{12}Be beam into the neutron unbound $d_{5/2}$ state of ^{11}Be and the search for the first excited state of ^{24}O.

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