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### **Studies of Neutron-Rich Nuclei with the MoNA/Sweeper System at the NSCL<sup>1</sup>**

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Binding energies and excitation spectra of nuclei are important benchmarks for nuclear structure calculations. In the case of very neutron-rich or neutron-unbound nuclei, changes of the shell structure and the effects from the continuum have to be taken into account in theoretical calculations. The Modular Neutron Array (MoNA) was completed in late 2003 and was commissioned in 2004 along with the 4 T sweeper magnet. The measurements done with the system have focused on the structure of very neutron-rich p-shell nuclei near where the magic  $N = 8$  or  $N = 20$  numbers may disappear. To date, measurements of  $^{25}\text{O}$  (ground state energy),  $^{24}\text{O}^*$  (neutron-unbound excited state),  $^{13}\text{Li}$  (two-neutron decay), and  $^{12}\text{Be}$  (spectroscopic factor) have been completed. A summary of the state of these experiments will be given. The results of a more global study of nuclei at the neutron dripline using fragmentation will also be shown. In addition to a discussion of the physics being studied, the current role of undergraduate students in experiments and analysis will be discussed. An update on how the widely-separated members of the collaboration interact in between experiments will be presented.

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