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Nucleon transfer reactions with exotic light nuclei

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There has been considerable renewed interest in the structure of light nuclei, especially away from stability, in recent years. Modern theoretical techniques for calculating nuclear structure, often referred to as "*ab-initio*" methods, have been extremely successful in predicting a variety of properties for systems with 10 or fewer nucleons. These include excitation energies, transition matrix elements and charge radii. The possibility to use simple direct transfer reactions such as *(d,p)* to study the properties of exotic light nuclei extends our ability to test these models at the extremes of neutron number where data were not previously available. Of particular interest are very loosely or even unbound systems where questions may remain about the applicability of these theoretical approaches. I will discuss some of the opportunities and challenges presented in this new domain, and present two recent examples of neutron transfer measurements to study the nuclei ^{9}Li and ^{7}He. This work supported by the U. S. Department of Energy, Office of Nuclear Physics under contract DE-FG02-04R41320.