

Abstract Submitted  
for the APR11 Meeting of  
The American Physical Society

**Reactions with deuterons within the CDCC formalism<sup>1</sup>** NEELAM UPADHYAY, FILOMENA NUNES, NSCL, Michigan State University, TORUS COLLABORATION — The continuum discretized coupled channels (CDCC) method is applied to  $(d, p)$  and  $(p, d)$  reactions populating bound states of rare isotopes to better understand the role of the continuum. As a first example, we study the elastic and breakup channels in  $^{10}\text{Be}(d, p)^{11}\text{Be}$  at low and intermediate energies. The deuteron incoming wave function is modeled as an effective three-body problem  $p + n + ^{10}\text{Be}$  and expanded using the CDCC method. The role of the deuteron spin and the  $p - n$  interaction is investigated. The inverse reaction  $^{11}\text{Be}(p, d)^{10}\text{Be}$  is also considered. Finally, a comparison to elastic scattering, breakup and transfer of deuterons on  $^{12}\text{C}$  at similar energies is made.

<sup>1</sup>This work is supported by the U. S. Department of Energy

Neelam Upadhyay  
NSCL, Michigan State University

Date submitted: 14 Jan 2011

Electronic form version 1.4