Abstract Submitted
for the HAW09 Meeting of
The American Physical Society

Mechanisms in knockout reactions D. BAZIN, R.J. CHARITY, R.T. DE SOUZA, M.A. FAMIANO, A. GADE, V. HENZL, D. HENZLOVA, S. HUDAN, J. LEE, S. LUKYANOV, W.G. LYNCH, S. MCDANIEL, M. MOCKO, A. OBERTELLI, A.M. ROGERS, L.G. SOBOTKA, J.R. TERRY, J.A. TOSTEVIN, M.B. TSANG, M.S. WALLACE — We report on the first detailed study of the mechanisms involved in knockout reactions, via a coincidence measurement of the residue and fast proton in one-proton knockout reactions, using the S800 spectrograph in combination with the HiRA detector array at the NSCL. Results on the reactions ^{9}Be(^{9}C,^{8}B+X)Y and ^{9}Be(^{8}B,^{7}Be+X)Y are presented. They are compared with theoretical predictions for both the diffraction (elastic breakup) and stripping (inelastic breakup) reaction mechanisms, as calculated in the eikonal model. The data shows a clear distinction between the two reaction mechanisms, and the observed respective proportions are very well reproduced by the reaction theory. This agreement supports the results of knockout reaction analyses and their applications to the spectroscopy of rare isotopes. In particular, this add considerable support to the use of the eikonal model as a quantitative tool, able, for example, to determine single-particle spectroscopic strengths in rare isotopes.

Daniel Bazin
NSCL/MSU, East Lansing, MI 48824

Date submitted: 24 Jun 2009 Electronic form version 1.4