Abstract Submitted
for the APR10 Meeting of
The American Physical Society

Analyzing powers for the $^{12}C(^7\vec{L}i, t/d/p)$ reactions[1] WILLIAM WEINTRAUB, K. KEMPER, D. ROBSON, B.G. SCHMIDT, Department of Physics, Florida State University, N. KEELEY, A. Soltan Institute for Nuclear Studies, Warsaw, Poland, F. MARÉCHAL, IN2P3 Orsay, France, B.T. ROEDER, Texas A&M University, College Station, Texas — The first, second, and third rank tensor analyzing powers $^TT_{10}$, $^TT_{20}$, $^TT_{30}$, and T_{20}, as well as cross section angular distributions for $^{12}C(^7\vec{L}i, t/d/p)$ at 34 MeV were measured. An earlier work[2] showed that the ratio $\frac{3\,^TT_{30}}{^TT_{10}}$ for the elastic, inelastic, and single nucleon reactions could distinguish peripheral, in plane reaction processes, from other processes. The present work was undertaken to determine if the $(^7\vec{L}i, d/p)$ transfer reactions could be described as a direct process. High statistics were obtained because the analyzing powers $^TT_{30}$ are small. Large values for $^TT_{10}$ were found for the $(^7\vec{L}i, d/p)$ reaction indicating that they do not proceed primarily through the compound nucleus process. Results of FRDWBA calculations will be compared to experiment to determine spectroscopic amplitudes and the nature of the transfer reactions. Results indicate that all reactions are direct to some degree and there is evidence for the direct transfer of a ^{4,5}He cluster, but not a ^{6}He cluster.

[1]Supported in part by the N.S.F., and the State of Florida.
[2]E.E. Bartosz, *etal* Phys. Lett **B 488** (2000) 138

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Date submitted: 23 Oct 2009 Electronic form version 1.4