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Transfer of the Oak Ridge Enge Split-Pole Spectrograph to Notre Dame

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Light-ion transfer reactions have been used for many years to study the structure of exotic nuclei. Recently there has been a renaissance of such studies to the application of nuclear astrophysics. In particular, knowledge of the structure of proton-rich exotic nuclei can be used to estimate the astrophysical rates of proton-induced reactions in explosive hydrogen burning. Such studies require the extraction of reaction ejectile energy and angular distributions, and the use of Enge split-pole spectrographs have traditionally provided a good combination of the required resolution and acceptance.

Recently the Department of Energy has approved the transfer of the Oak Ridge Enge split-pole spectrograph to the University of Notre Dame Nuclear Science Laboratory (NSL) in order to study transfer reactions of astrophysical interest. Light ion reactions [such as ($^3\text{He},d$), ($^3\text{He},t$), ($^3\text{He},^4\text{He}$), ($^6\text{Li},d$), and ($^7\text{Li},t$), for instance] will be used to study the structure of the exotic nuclei produced by bombarding stable targets. The spectrograph has been disassembled at Oak Ridge and shipped to Notre Dame. Detailed plans for installation and the status of the project will be discussed.

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