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The Future of Transfer Reactions with Stable Beams in the Southeast[1]

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Charged-particle spectroscopy is a powerful tool that has been used for decades to accurately and precisely measure properties of excited states in nuclei populated in transfer and charge exchange reactions with stable beams. Typically these measurements are performed in regular kinematics where a light, stable beam impinges on a heavy target and the light reaction particles are momentum analyzed using a spectrograph. These studies have impacted a wide variety of areas in low-energy nuclear physics from tests of shell model predictions [1] to indirect determinations of astrophysical reaction rates [2]. Unfortunately, many of the facilities where these studies were performed have been shut down in recent years and there currently exists a gap in the capabilities to perform charged-particle spectroscopy measurements in the United States. In order to fill this gap, there are several efforts underway to restore spectrographs at University accelerator facilities, including the installation of the Enge split-pole spectrograph, formerly housed at the Wright Nuclear Structure Laboratory at Yale University, at Florida State University's accelerator laboratory. A review of charged-particle spectroscopy and its applications in nuclear physics will be given and plans for the future program with the Yale Enge spectrograph at FSU will be discussed.

[1] J. P. Schiffer *et al.*, Phys. Rev. Lett. **108**, 022501 (2012).
[2] C. M. Deibel *et al.*, Phys. Rev. C **80**, 035806 (2009).

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