

NUCLEAR SEMINAR SERIES

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Monday, September 23
4:00 pm - Rm 184 NSH

ISLA: Isochronous Separator for “Lots of Astrophysics”

Our quest to understand the origin of visible matter in the universe and the mechanisms that drive stellar life and death is strongly linked to our quest to understand the structure and reactions of unstable forms of nuclear matter, known as rare-isotopes. Recent investments in rare-isotope research infrastructure, combined with progress in both observations and modeling, offer a time of great scientific opportunity. The Isochronous Separator with Large Acceptances (ISLA) has been proposed as a multi-purpose spectrometer for experiments with low-energy beams from the 12 MeV ReAccelerator (ReA12) at the Facility for Rare Isotope Beams (FRIB). ReA12 will reaccelerate stopped FRIB beams to a range of energies ideal for transfer reactions, multiple Coulomb excitation, fusion, and deep inelastic scattering. ISLA will provide efficient rejection of unreacted beam; large acceptances of momentum, angle, and charge state distributions; and high M/Q resolving power for the identification of reaction products. ISLA has been endorsed by the ReA12 Recoil Separator working group of the FRIB Users Organization as the single device that meets the needs of all the physics cases proposed by the community for studies at ReA12. I will discuss the scientific motivation for ISLA, with an emphasis on open questions in Nuclear Astrophysics; the basic properties and current status of the ISLA design; and some thoughts on how to approach early operation of ISLA.



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