

ASTROPHYSICS MEASUREMENTS WITH GAS TARGETS AND RADIOACTIVE BEAMS AT HRIBF

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Monday, September 24 ❖ 4:00 P.M. ❖ 124 NSH

The rapid consumption of hydrogen and helium fuel in explosive environments generates a nucleosynthesis and luminosity output very different from that occurring in solar burning. This explosive nature results in the generation of radioactive nuclei, which can be further processed by subsequent reactions. Many of these reactions and the radioactive nuclei involved have not been adequately calibrated or even studied in the laboratory. Such studies are crucial to our understanding of these explosive events.

Exotic beam facilities are required to perform these critical calibrations. Radioactive beams are used to bombard hydrogen- and helium-gas targets in inverse kinematics. My talk will focus on the use of these gas targets with radioactive beams at the Holifield Radioactive Ion Beam Facility (HRIBF). I will further describe the evolution of the HRIBF gas target into the new JENSA supersonic gas-jet target for studies at HRIBF and at the ReA3 facility at the NSCL. The gas target, associated detectors, and first measurements will be described.

This work is supported by the Office of Nuclear Physics, Department of Energy and the National Science Foundation.