DIRECT MEASUREMENTS OF ASTROPHYSICAL REACTIONS USING RADIOACTIVE ION BEAMS

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Classical novae are among the most frequent and violent stellar explosions to occur in our Galaxy, thereby playing a key role in its chemical evolution. Recently, remarkable advances in astronomy and meteoritics have produced a wealth of observational data on these cataclysmic astronomical events, giving us unprecedented insight into their properties. However, our understanding of this latest data is severely hindered by large uncertainties in the underlying nuclear physics processes involving unstable nuclei that drive these stellar scenarios.

Modern state-of-the-art radioactive beams facilities provide the means to resolve this issue through their ability to recreate the conditions that occur in explosive stellar phenomena in a terrestrial laboratory. In particular, it is now possible to obtain direct measures of astrophysical reactions involving unstable nuclei that govern both the path of nucleosynthesis and rate of energy release in classical novae. In this talk, recent direct measurements of astrophysical reactions influencing key nova observables, performed using the DRAGON recoil separator, will be discussed.