TRIUMF Advanced Rare Isotope Laboratory (ARIEL)

Contribution ID: **74** Type: **Invited oral presentation**

Indirect Neutron-Capture Constraints Far from Stability

Monday, 20 April 2026 14:10 (20 minutes)

One of the biggest questions in nuclear astrophysics regards how elements are synthesized in stellar environments. Observations of astrophysical phenomena provide us with evidence for different nucleosynthesis processes, and modelling these astrophysical scenarios requires a detailed description of the complex nuclear physics that is involved. Radioactive decay, nuclear reactions, and the properties of individual nuclei are required to fully understand the origin of the elements, and substantial experimental and theoretical progress has been made to address this question. On the neutron-rich side of stability, neutron-capture processes such as the slow (s), intermediate (i), and rapid (r) processes play a pivotal role in our understanding of the origin of heavy elements. Direct neutron-capture measurements are infeasible for the short-lived nuclei involved in these processes, and therefore indirect neutron-capture techniques are needed. In this presentation I will discuss indirect neutron-capture techniques that have been developed over the last few years and how they can be applied to constrain reactions relevant to r-process nucleosynthesis.

Primary author: RICHARD, Andrea (Ohio University)

Presenter: RICHARD, Andrea (Ohio University)

Session Classification: Nuclear Astrophysics enabled by ARIEL rare isotope capabilities