

WEDNESDAY

DECEMBER 2

4:00 P.M.

RM 118 NSH

Refreshments
in Rm 202 NSH
@ 3:30 pm

Gamma-Ray Spectroscopy with Radioactive Ion Beams

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Over the past 15 years, the world's highest power online isotope separator and accelerator facility, ISAC, has been developed at TRIUMF, Canada's national laboratory for nuclear and particle physics research. ISAC produces high-quality, high-intensity beams of low-energy radioactive ions through the isotope separation online (ISOL) technique, with the ability to subsequently accelerate these short-lived isotopes to the energies relevant to stellar burning and explosions, and beyond to energies above the Coulomb barrier. These rare isotope beams are used to probe the evolution of nuclear structure far from the stable combinations of neutrons and protons that form the isotopes of everyday experience and to study the synthesis of the heavy chemical elements in explosive astrophysical environments. Specific isotopes with desirable properties are also selected and exploited in high-precision tests of the electroweak Standard Model of particle physics and searches for the new physics beyond the Standard Model.

Spectroscopy with large arrays of high-resolution gamma-ray detectors provides a powerful, and versatile, technique for the study and exploitation of these unique beams of radioactive ions. In this presentation, I will provide an overview of recent progress and highlights in the gamma-ray spectroscopy programs at ISAC, as well as a look to the future with the recently commissioned high-efficiency GRIFFIN gamma-ray spectrometer and the new superconducting electron linear accelerator driver constructed as part of the Advanced Rare Isotope Laboratory (ARIEL) project at TRIUMF.