

**UNDERSTANDING THE UNIVERSE
USING RARE ISOTOPES**

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Wednesday, April 18, 2012 ❖ 4:00 P.M. NSH 118
(Refreshments at 3:30 P.M. NSH 202)

Exotic nuclei far from stability play an essential role in the quest to understand some of the most fundamental questions about our universe.

The evolution of the structure of exotic nuclei is governed by the properties of the nuclear interaction, which in turn results from the interaction of quarks and gluons inside the nucleons. Recent progress in experimental and theoretical studies of exotic nuclei revealed the importance of tensor and 3-body forces for the evolution of shell structure in atomic nuclei. Exotic nuclei are also key to our understanding the origin of the heavy elements, which are produced in explosive astrophysical events. Finally, precision measurements of the electro-weak decay of unstable nuclei enables unique access to search for physics beyond the standard model. The ISAC facility at TRIUMF is one of the world leading rare isotope beam facilities with a broad experimental program in Nuclear Structure, Nuclear Astrophysics and Electro-weak interaction studies. In this talk I will review the ISAC physics program, present highlights of the recent program, and present the progress on the future ARIEL facility that will dramatically enhance TRIUMF's rare isotope program with a new electron linear accelerator and an additional proton beam-line providing full multi-user capability.

Colloquium

**All interested
persons are
cordially
invited to
attend.**