



RADIOACTIVITY AT THE LIMITS OF NUCLEAR STABILITY

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February 8, 2021

Zoom Line: <https://laurentian.zoom.us/j/92591146494>

**Meeting ID:
925-9114-6494**

1:00pm ET

Atomic nuclei, at the limits of stability, often reveal surprising phenomena such as exotic shapes and structures, unexpected level ordering and mixing and even rare modes of radioactive decay. Since the most exotic nuclei are not found naturally on earth, and have extremely short half-lives, studying them in the laboratory poses a significant experimental challenge requiring powerful rare-isotope production and accelerator facilities coupled to high-luminosity detection systems. In this talk, I will focus on radioactivity of rare isotopes and what we can learn by observing their decay products using examples from experiments performed at TRIUMF in Canada and at GANIL in France. An introduction to a novel gas-filled detection system called the Active Target and Time Projection Chamber as well as a new project, the Regina Cube for Multiple Particles, will be described in detail.

