TRIUMF Accelerator Science and Technology

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TRIUMF is Canada's national laboratory for Nuclear and Particle Physics. In this talk I will review our operating accelerators, including the 500 MeV Cyclotron and the ISAC Rare Isotope Beam facility, and highlight the science they enable in nuclear and particle physics, materials science, and nuclear medicine. I will present plans and progress towards the construction of ARIEL, the Advanced Rare IsotopE Laboratory, a state of the art facility for the production of isotopes for nuclear physics and medicine. The flagship of ARIEL is a 50 MeV, 10 mA cw electron linear accelerator based on superconducting radio-frequency technology. I will discuss its scientific promise as a photo-fission driver for the production of rare isotope beams and its potential use as a source of coherent and incoherent synchrotron radiation in a broad range of wavelengths from THz and IR to UV and x-rays. I will conclude with the topic of accelerator science education and the initiative to establish a strong graduate program at TRIUMF in collaboration with Canadian and international universities.