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## Development and simulations of the CANREB RFQ buncher and cooler at the TRIUMF facility

*Tuesday, June 16, 2015 4:15 PM (15 minutes)*

TRIUMF's new Advanced Rare IsotopE Laboratory (ARIEL) is the up and coming producer of rare isotope beams for nuclear science in Canada. It will triple the number of beamlines available to both of the (rare) Isotope Separator and Accelerator (ISAC) facilities, and will expand their range of available isotopes. An overview of ARIEL and the CANadian Rare-isotope facility with Electron-Beam ion source (CANREB) will be given with the focus on the CANREB Radio Frequency Buncher and Cooler (CANREB RFQ). The theory behind the operation of RFQs will be discussed as well as the results of systematic studies done via simulation to optimize the injection and extraction ion optics. The RFQ is expected to provide bunching and cooling of beams with masses in the range of 15 to 250 amu utilizing two separate RF circuits of different frequencies to span this large range efficiently. Comparisons will be made via simulations between both the TITAN RFQ (located at TRIUMF) as well as the BECOLA RFQ (located at MSU) after which the CANREB's RFQ novel electrode structure is modeled.

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