

## **Possible high current tests at CBETA**

Karl Smolenski

CBETA is a four-pass ERL designed and built by a collaboration between Brookhaven National Lab and Cornell University. Based on the existing Cornell ERL injector and SRF system, CBETA will be capable of 150MeV and currents up to 40mA. For the initial commissioning period high currents are not the primary goal, but for any EIC Ion Cooler high currents will be required. What are the limits to running CBETA with currents similar to those in an EIC Ion Cooler?

This talk will discuss the potential of the existing CBETA subsystems to carry out high current running. Past experience with operating the Cornell DC electron gun at high current will be presented with a focus on limitations and possible improvements for further high current tests. The Injector cryomodule (ICM) and main linac cryomodels (MLC) performance limits will be discussed along with tests to verify those limits. Halo production and beam scraping in the accelerator beamline has the potential to be a significant contributor to radiation damage of the Halbach arc magnets and to require improved perimeter radiation shielding for personnel protection. Finally upgrades that may improve high current performance will be presented for discussion.