



Contribution ID: 140

Type: Poster

Double-Sided Detector for Electron Beam Alignment and Measurement of Back-Streaming Electrons in ExtendedEBIS at BNL

An upgrade of the electron beam ion source, called ExtendedEBIS, is under progress at Brookhaven National Laboratory. The ExtendedEBIS has two superconducting solenoids in series to transport the electron beam. We develop an electron beam detector installed between the solenoids. The detector is two-sided. Each side has 4 quadrant plates with an aperture slightly larger than the electron beam radius. By comparing the 4 signals of the quadrant plates facing to the cathode side, it can be found how far the electron beam is from the designed axis without completely intercepting the electron beam. One can adjust the electron beam position continuously without stopping the beam. On the other hand, the other quadrant plates on the collector side are to measure the electrons back-streaming from the collector or the downstream electrodes to the cathode. It is known, from the experiences, that the back-streaming electrons could cause the break of the electron beam or trip of the power supplies on drift tube electrodes. It is important to understand how the back-streaming electrons behave and how to control it. In this presentation, the detector and the experimental results at Extended EBIS test bench will be explained.

E-mail for contact person

sikeda@bnl.gov

Funding Information

Primary authors: BEEBE, Edward (Brookhaven National Laboratory); IKEDA, Shunsuke; OKAMURA, Masahiro (Brookhaven National Laboratory); KONDRASHEV, Sergey (BNL); KANESUE, Takeshi (BNL)

Presenter: IKEDA, Shunsuke

Session Classification: Poster Session 2

Track Classification: Beam extraction, transport, and diagnostics