

Electron Cloud Measurements at Fermilab

Saturday, October 9, 2010 10:00 AM (30 minutes)

Using the new measurement station in the Main Injector, we have made a series of ECloud measurements in 2009 and 2010. The installation included Titanium-Nitride (TiN) and amorphous carbon coated beam pipes; these materials were directly compared to an adjacent stainless chamber through measurement with Retarding Field Analyzers (RFAs). Over the long period of running we were able to observe the conditioning of the beam pipe caused by the beam, and correlate it with electron fluence, establishing a conditioning history for each material. Additionally, the installation has been used to measure of the electron energy spectrum, compare detector results, and the detailed behavior of the Electron Cloud during the acceleration cycle. Finally, a new installation, developed in conjunction with Cornell and SLAC, will allow direct measurement of the SEY as conditioned in the accelerator; this conditioning will be compared to that found at Cornell, allowing comparison between electron/positron and proton machines.

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