Matching Simulation Data to Calibration Data for the Silicon Charge Detector used in the ISS-CREAM Instrument

The ISS-CREAM instrument was installed on the International Space Station in August 2017. The Silicon Charge Detector (SCD) is a component of the instrument that measures the charge of cosmic rays. A highly detailed model of the SCD was created in the particle physics simulations package GEANT4. A small version of the SCD was created to be tested in the Heavy Ion Beam at CERN in 2016 to determine detector response for ions Helium through Lead. A model of this test SCD was also created in GEANT4 and simulations were run to mirror the conditions of the beam tests. Comparing the simulation data to CERN data provided the information necessary to implement smearing techniques on the full SCD in GEANT4. As a result, simulations for ISS-CREAM can now accurately portray the physical response of the SCD. The detailed process of comparing the data will be discussed.