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Charged Particle Trajectories in Sweeper Magnet for LISA Commissioning Run[1] ALYSON BARKER, SIERRA GARRETT, NATHANIEL TAYLOR, WARREN F. ROGERS, Westmont College, MONA COLLABORATION —
The Large multi-Institutional Scintillator Array (LISA) located at NSCL, MSU, is used in conjunction with the Modular Neutron Array (MoNA) and the Sweeper Magnet for experiments investigating the properties of exotic neutron-rich nuclei near the neutron dripline. In the LISA commissioning experiment, designed to study neutron unstable ^{24}O excited states, decay energy calculations require careful determination of charged fragment and neutron trajectories following breakup. Tracking of charged particles through the Sweeper Chamber is accomplished using two Cathode Readout Drift Chamber (CRDC) detectors separated by 1.8 m. During analysis of individual charged fragment passages through both CRDCs we recognized a majority of events had incomplete charge collection in the center pads. Without correction, standard peak location algorithms incorrectly determined the individual event centroids thereby reducing trajectory resolution. We developed a method and algorithm for correctly determining the centroids to restore trajectory resolution, critical for neutron breakup event reconstruction and decay energy determination.

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