Abstract Submitted
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Novel Techniques for the Position Calibration of FAUST DAVID BALABAN, LAUREN HEILBORN, ALAN MCINTOSH, MIKE YOUNGS, PAUL CAMMARATA, SHERRY YENNELLO, JUSTIN MABIALA, ANDREW ZARRELLA, LARRY MAY, Cyclotron Institute Universtiy of Texas A&M — The Forward Array Using Silicon Technology (FAUST) consists of 68 silicon cesium-iodide telescopes, which identify and measure the energy of charged particles. In order to measure the correlation functions of light charged particles (particularly, protons) FAUST has recently been upgraded with position-sensitive silicon detectors, which will enable higher resolution in relative momentum. To get maximum benefit from the upgrade, the positions of the detectors must be accurately known. For this calibration, a tungsten mask with diagonal slits is placed in front of the array so that alpha particles from a source, or Rutherford scattered off of a gold target hit the detectors in a striped pattern. The stripes are then identified on each detector using the K-means algorithm, which can be used to identify clusters of data. They are then characterized by a simple linear fit. Once the stripes are identified, a set of linear transformations must be found which will move a simulation of ideal data to match the measured data. One possible approach to this problem is to use the Hill Climbing algorithm to find the actual position of detectors by manipulating the slopes of the lines. Prospects for this position calibration technique will be presented.

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