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Malorie Stowe
David Grosnik

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Initial Studies of the Forward GEM Tracker

Authors: Malorie Stowe, Dr. David Grosnick

Affiliation: Physics and Astronomy - the STAR Collaboration

The spin of the proton is known to be produced by several constituents including quarks, antiquarks, and gluons. It has been the goal of STAR to measure the contribution of gluons and various sea quarks to the proton spin. The Forward GEM Tracker (FGT) is a newly constructed detector to be placed into STAR, which is located at the RHIC collider at Brookhaven National Laboratory. The FGT serves to track the position of forward going charged particles, produced in proton-proton collisions, as they travel towards the Endcap Electromagnetic Calorimeter (EEMC). This information will be critical in helping to determine the contribution of the quarks and antiquarks to the spin of the proton. It will be instrumental in observing the decay leptons from W bosons created by the interaction of the quark of one proton and the antiquark of another in a proton-proton collision. This project is analyzing the FGT data collected from the first test runs that have been conducted using cosmic rays on a single quadrant. The goal is to ensure that the detector is working as designed and to develop software to track charged particles. The FGT is scheduled to be installed into STAR this fall.

Information about the Author:

Faculty Sponsor: Robert Manweiler

Student Contact: mstowe@bsu.edu