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Construction of the STAR Event Plane Detector

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The Event Plane Detector (EPD) is an upgrade to the STAR experiment. It is similar to the Beam Beam Counter (BBC) which has been a part of the STAR experiment since the beginning, but will provide more pseudorapidity coverage ($2.2 < |\eta| < 5.1$ compared to $3.3 < |\eta| < 5.0$) and higher granularity (744 distinct channels compared to 32), leading to an increase in first-order event plane resolution by a factor of at least 1.5. Additional benefits from the EPD include TPC-independent centrality determination and event planes at BES energies where the VPD and ZDC suffer from low occupancies. The EPD is a set of disks consisting of 1.2cm-thick scintillator tiles optically isolated with reflective epoxy and embedded with wavelength-shifting fibers held in place with optical epoxy which are coupled to Silicon photomultipliers via clear fiber optics. The detector was constructed in $2\pi/12$ azimuthal sections called supersectors, each of which were tested for tile quality with cosmic rays and tile crosstalk with a radioactive source. In this poster, I will discuss the process of constructing the supersectors that make up the disks as well as the multiple tests performed on the finished supersectors to characterize their quality.

Content type

Experiment

Collaboration

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