



Contribution ID: 505

Type: Poster

Construction of the sPHENIX Event Plane Detector

Tuesday, 5 September 2023 17:30 (2h 10m)

Constructed at Lehigh University between 2021 and 2023, the sPHENIX Event Plane Detector (sEPD) will measure charged particle multiplicity at forward rapidity from the collision of hadrons. This detector consists of 24 triangular sectors, each of which is divided into 31 optically isolated tiles of plastic scintillating material, such that light can be collected from a discrete area of the detector then converted later to an electronic signal. A wavelength shifting fiber is glued into each tile using an optical epoxy with an index of refraction matching that of the scintillator. The tiles cover 16 segments in η and 24 in ϕ . The sectors were installed into two disks covering a pseudorapidity of $2.1 < |\eta| < 4.9$. To build the detector, scintillating plastic was milled into a triangular shape to create 24 sectors. Grooves for the optical fibers were then machined into the sectors, in addition to channels to divide each sector into 31 tiles. Optical fibers were then glued into the grooves, and the channels were filled with a reflective epoxy to achieve optical isolation between tiles. An overview of this construction process will be given in detail, including the machining of the sectors, the installation of the fibers in the tiles, and the creation of two types of bundles of fiber optic assemblies.

This material is based upon work supported by the National Science Foundation under Grant No. 2117773.

Category

Experiment

Collaboration (if applicable)

Primary author: WOLFE, Valerie (Lehigh University)

Presenter: WOLFE, Valerie (Lehigh University)

Session Classification: Poster Session

Track Classification: Future facilities/detectors