



Contribution ID: 121

Type: ORAL

A straw tracker for FCC-ee

Wednesday 9 October 2024 15:03 (20 minutes)

We propose to perform R&D studies for a straw tracker that can be used as an outer tracker for the FCC-ee experiments. The straw tracker offers the advantage of a low material, a crucial factor in minimizing overall material budget of the tracker. With the capability to achieve a single-hit resolution of 100-120 microns per layer with O(100) layers in total, the straw tracker will play a pivotal role in pattern recognition and particle identification. Each individual straw serves as a standalone unit, facilitating easy removal of a channel in case of a broken sense wire. All charges produced in one single straw will remain in that unit. The electric field is radial symmetric and the hit position resolution is thus independent of the particle's incident angle. Furthermore, the adaptability of the straw tracker design is highlighted by its ability to accommodate straws with different radii in different detector regions.

We present simulation and optimization studies for a straw tracker using GEANT4 and gas mixture studies using Garfield. We will also present our prototype straw tracker and some studies performed using cosmic muons.

Primary authors: ZHU, Junjie (University of Michigan); GUAN, Liang (University of Michigan)

Presenter: GUAN, Liang (University of Michigan)

Session Classification: Parallel - WG3

Track Classification: WG3: WG3 - Detector R&D