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A Straw Tracker for the FCC-ee

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We propose to conduct research and development on a straw tracker that can be used as an inner tracker for the FCC-ee. The straw tracker offers the advantage of a low material, a crucial factor in minimizing overall inner detector material budget. With the capability to achieve a single-hit resolution of approximately 120 microns per layer, and the potential for up to 100 layers, 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. 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 will present simulation and optimization studies for a straw tracker using GEANT4. We will also present detailed Garfield simulation of the gas mixture and the resulting raw detector signals.

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