Contribution ID: **957** Type: **Parallel session talk**

High Precision Time Projection Chamber Technology R&D for the Future Circular e+e- Collider

Friday 19 July 2024 10:45 (17 minutes)

The Circular Electron Positron Collider accelerator TDR, as a Higgs and high luminosity Z factory, has been released in 2023. The baseline design of a detector concept consists of a large 3D tracking system, which is a high precision (about 100μm) spatial resolution Time Projection Chamber (TPC) detector as the main track embedded in a 3.0T solenoid field, especially for the accelerator operating at Tera-Z. TPC requires the longitudinal time resolution (<100ns) and the physics goals require PID resolution (<3%).
In this talk, we will present the feasibility and progress of the high precision TPC technology for CEPC, even at Tera-Z. The fundamental parameters such as the spatial resolution, PID with the good separation power and the drift velocity were studied by the simulation and measurement using a TPC prototype with 500mm drift length. We will review the track reconstruction performance results and summarize the next steps towards TPC construction for CEPC physics and detector TDR.

Alternate track

I read the instructions above

Yes

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