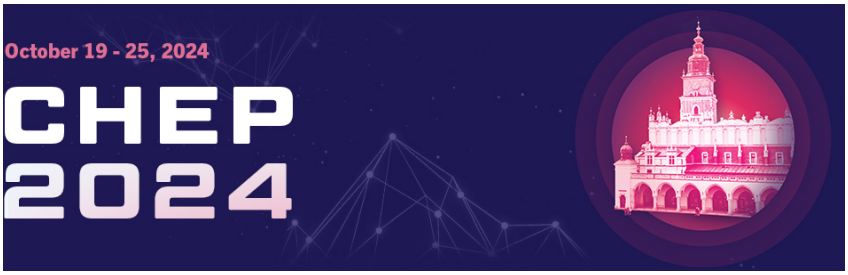

Contribution ID: **237** Type: **Talk**

Application of TRACCC seeding to the CEPC vertex detector

Wednesday 23 October 2024 16:51 (18 minutes)

The Circular Electron Positron Collider (CEPC) is a future experiment mainly designed to precisely measure the Higgs boson's properties and search for new physics beyond the Standard Model. In the design of the CEPC detector, the VerTeX detector (VTX) is the innermost tracker playing a dominant role in determining the vertexes of a collision event. The VTX detector is also responsible for providing seeds for the track following algorithms to find tracks in the outer trackers. TRACCC is one of the R&D lines aiming for developing the demonstrator for a full tracking chain for accelerators within the ACTS project.

This contribution will present the implementation of the seeding algorithm for the VTX detector based on TRACCC in the CEPC software (CEPCSW) environment. The integration of TRACCC into the CEPCSW, which is using Gaudi as the underlying framework and employing DD4hep as detector description tool and EDM4hep as the event data model, will be introduced. The CEPC VTX detector has three layers and both sides of each layer are mounted with silicon pixel sensors. To accommodate this specific detector structure, the default seeding algorithm in TRACCC, which creates three-space-points seeds, has been extended for six space points case. This contribution will also describe the solution of using one common memory for both EDM4hep and VecMem to avoid the overhead from data copy. For all the above work, both physics performance and computing performance are measured and will be presented.

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