



PPD Seminar

Vertex detector and the interaction region R&D of the e^+e^- Future Circular Collider

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I will review the status of R&D on the vertex detector and interaction region layout for the e^+e^- Future Circular Collider (FCC-ee) at CERN. The FCC-ee is designed as an electroweak, flavour, Higgs and top factory with unprecedented luminosities. Many measurements at the FCC-ee will rely on the precise determination of the vertices, measured by dedicated vertex detectors. All vertex detector designs envisaged so far use Monolithic Active Pixel Sensors (MAPS). In this seminar, I shall present the status of the fully engineered vertex detectors, their integration with the collider beam pipe, and discuss their predicted performance using GEANT-based full simulation. I will also show studies of the predicted beam-induced backgrounds, and discuss their impact on the vertex detector, and present possible mitigation methods. These backgrounds predicted in the FCC-ee detectors will be compared to those post-dicted in SLD, a detector running at the SLC linear collider between 1992 and 1998. Finally, a critical comparison of the simulation results with the approximate statements made by Chris Damerell at a seminar held at RAL in October 2025 will conclude the presentation.

