Contribution ID: **15** Type: **(c) Abstract for either a talk or a poster**

Optimization of Si tracking systems

Tuesday, June 11, 2024 6:24 PM (18 minutes)

The CERN proposed e^+e^- Future Circular Collider (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, and the Silicon Wrapper at about two meters in radius, improving momentum resolution, providing precise angular acceptance definition, with the additional possibility of timing information.

This contribution discusses the capabilities of the IDEA tracking systems, using DD4hep full simulation, and an optimized layout of the Silicon Wrapper. We will further present a possible layout beyond this baseline design, introducing a novel concept for an ultra-light vertex detector using curved wafer-scale MAPS, and discuss the overall optimization.

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Session Classification: Physics, Experiments and Detectors

Track Classification: Physics, Experiments and Detectors: Detector Concepts