

The IDEA Drift Chamber for a Lepton Collider

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Along the path defined by the European Strategy for Particle Physics, an electron-positron Higgs factory is the highest priority next collider.

The FCC program at CERN combine in the same 100km infrastructure a high luminosity Higgs and Electroweak factory e collider, followed by a 100 TeV hadron collider. The IDEA project (Innovative Detector for an Electron-positron Accelerator), as a proposal for an experiment along the electron-positron collider, includes an ultralight drift chamber as the main tracking device designed to provide efficient tracking, high-precision momentum measurement and excellent particle identification. One of the most relevant features of this drift chamber, fundamental for precision electroweak physics at the Z pole and flavor physics, is the high transparency, in terms of radiation

lengths, obtained by using a novel approach adopted for the wiring and assembly procedures.

Particle identification capabilities are also particularly relevant for heavy flavor tagging and are reached by using a cluster counting technique, expected to provide a two-times better particle separation with respect to the traditional method

based on energy loss per unit length. An overview of the status of the IDEA drift chamber project is provided in this talk, together with the last updates on mechanical simulation studies.

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