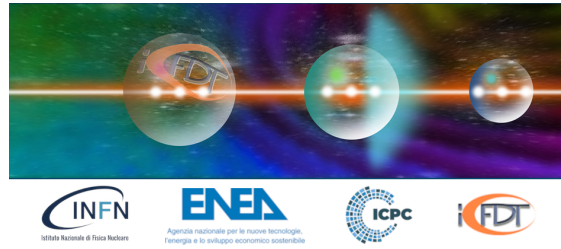


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Diagnostics and control on FCC

Tuesday, 22 October 2024 14:15 (20 minutes)

The Future Circular Collider (FCC) project aims to construct the next-generation accelerator of the CERN complex. The primary objective is to build a 90 km electron-positron collider (FCCee), designed to operate at beam energies ranging from 45.6 to 182.5 GeV. The immense scale of this machine and the unprecedented properties of its beams present significant challenges for beam diagnostics. This talk provides an overview of the diagnostic options currently under investigation for FCCee, focusing on dedicated R&D activities aimed at developing novel instrumentation. The Heterodyne Near Field Speckle (HNFS) technique is presented as a non-invasive solution to assess the transverse beam distribution from the coherence properties of the synchrotron radiation spontaneously emitted by the particles. Successfully tested at the ALBA synchrotron, this technique may push the boundaries of current technology in the field of transverse beam diagnostics, with potential applications in existing accelerator facilities.

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