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ATLAS Track Reconstruction for the High-Luminosity LHC

The large data samples at the High-Luminosity LHC will enable precise measurements of the Higgs boson and other Standard Model particles, as well as searches for new phenomena such as supersymmetry and extra dimensions. To cope with the difficult challenges such as large radiation doses and high pileup, during Phase II of the ATLAS upgrade the current Inner Detector will be replaced with a new all-silicon Inner Tracker (ITk). The new tracker is expected to cover the range $|\eta| < 4.0$. The tracking performance of the ITk layout under consideration is evaluated. The forward coverage would enable track-based rejection of forward pileup jets, which is particularly beneficial for studies of vector boson scattering and Higgs boson production through vector boson fusion.

Experimental Collaboration

ATLAS

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