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ATLAS Transition Radiation Tracker (TRT): Straw Tubes for Tracking and Particle Identification at the Large Hadron Collider

The ATLAS Transition Radiation Tracker (TRT) is the outermost of the three inner detector tracking subsystems and consists of ˜300000 thin-walled drift tubes ("straw tubes") that are 4 mm in diameter. The TRT system provides ˜30 space points with ˜130 micron resolution for charged tracks with $|\eta| < 2$ and $pT > 0.5$ GeV/c. The TRT also provides electron identification capability by detecting transition radiation (TR) X-ray photons in a Xe-based working gas mixture

Performance of the TRT in the LHC Run 1 was studied and will be presented in this report. The LHC luminosity in Run 2 will be significantly increased and the TRT will operate at very challenging conditions of high particle fluxes. In these conditions TRT occupancy will be significantly higher than in Run 1. Significant effort to prepare TRT operation in Run 2 was done in many areas and the results of these efforts will be presented in the talk. Expected TRT particle identification and tracking performance will also be presented.

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Track Classification: Gaseous Detectors