

Tracking properties of the ATLAS Transition Radiation Tracker (TRT)

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The tracking performance parameters of the ATLAS Transition Radiation Tracker (TRT) as part of the ATLAS Inner Detector are described for different data taking conditions in proton-proton, proton-lead and heavy ion collisions at the Large Hadron Collider (LHC). These studies are performed using data collected during the first and the second periods of LHC operation and are compared with Monte Carlo simulations. The performance of the TRT, operating with different gas mixtures (Xenon-based and Argon-based) and for high track multiplicities is presented. These studies show that the tracking performance of the TRT with these two gas mixtures is similar and that the detector still provides a significant contribution to the particle momentum measurement of the overall Inner Detector of the ATLAS experiment up to very high track densities and detector occupancies.

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