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Simulation of the ATLAS ITk Strip Endcap Modules for Testbeam Reconstruction and Analysis

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The Large Hadron Collider (LHC) is planned to be upgraded to the High Luminosity LHC (HL-LHC), which will increase the number of particles passing through the detectors. This will require the detectors to be upgraded in order to cope with the large increase in data collection and radiation as well as improving the tracking and particle reconstruction in the higher occupancy environment. A major upgrade to the ATLAS detector will be replacing the current Inner Detector (ID) with a fully silicon semiconductor based Inner Tracker (ITk). The sensors in the ITk strip forward region will use radial geometries, however the current testbeam simulation and reconstruction packages are designed with cartesian geometries. Presented is the work behind implementing a radial geometry and charge propagation for one of the ITk strip forward sensors, the R0 module, in these testbeam software packages. The data from the EUDET testbeam telescope at DESY, Hamburg, and the simulated data both undergo the same reconstruction and a comparison between the two is then performed.

Apply to be considered for a student award (Yes / No)?

Yes

Level for award (Hons, MSc, PhD, N/A)?

MSc

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