

Performance study of ATLAS ITk strip endcap modules using charged particle beams

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The current ATLAS Inner Detector is to be replaced with the all-silicon Inner Tracker (ITk) to cope with high pile-up and harsh radiation environment expected at the HL-LHC. During prototyping and early production phases of the ITk project, the performance of all types of ITk strip modules has been extensively evaluated using high-energy electron or hadron beams available at the DESY II and CERN SPS test beam facilities. Complementary to test beam measurements, full computer simulations of the experimental setup have been carried out using the Allpix-Squared framework. This contribution focuses on results obtained by reconstruction and analysis of test beam measurements with an R2 ITk strip endcap module at the DESY II test beam facility. Comparisons of experimental results with computer simulations for key performance metrics are presented. Additionally, the effects of the particle beam impacting the tested module at non-perpendicular angles are explored and discussed.

Alternate track

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Yes

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