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Test beam simulations of the ATLAS ITk Strip End-Cap detectors

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The Allpix-Squared simulation toolkit has long been used by the ATLAS Collaboration to perform simulations of silicon pixel and strip detectors, developed for future deployment in the upgraded central detector called the ATLAS Inner Tracker (ITk). Lately, the focus has shifted towards a particular class of strip detectors featuring radial geometry of strips, so-called ITk Strip End-Cap detectors, and for several years, prototypes of such detectors have been tested extensively at the DESY II Test Beam Facility.

Full simulations of the experimental test beam setup of the DURANTA telescope at the DESY-II Test Beam Facility have been performed in Allpix-Squared. Two strip End-Cap detectors were simulated as the device-under-test (DUT), the ATLAS ITk Strip R2 and R4. Additional efforts were spent to explore the effects of the particle beam impacting the DUTs under a non-perpendicular angle. The resulting simulation output has been reconstructed and analysed using the Corryvreckan framework, which has also been used by the ATLAS ITk Strip and Test Beam Group for reconstruction of test beam data.

Will the talk be given in person or remotely?

In person

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