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## Simulation of the strip sub-detector system in the new Inner Tracker of the ATLAS detector

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In the beginning of 2025, the Large Hadron Collider (LHC) will be shutdown in order for the final upgrades to the High Luminosity LHC (HL-LHC) to commence. This will almost quadruple the amount of collisions in the LHC, increasing the amount of data the detectors will have to deal with. Since the detectors were not designed to operate at these levels, they will also need an upgrade to deal with the increased radiation, data rates and amount of particles travelling through the detectors. One of the most extensive upgrades to the ATLAS detector will be the replacement of the current Inner Detector (ID) with an all silicon semiconductor based Inner Tracker (ITk). However, not only will the actual detector be upgraded, but the simulation of the detector will also need to be updated to match this new version. An accurate simulation of the detector is important since this is what is used to convert the outputs of the theoretical calculations (be it Standard Model (SM) or Beyond the Standard Model (BSM)) into a format that can be directly compared with the data coming from the experiment. Presented is some of the work behind updating the simulation of the strip detector in the ITk, from the sensors to the support structures and shielding components.

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

Yes

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

PhD

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