

## Design of the new ATLAS Inner Tracker for the High Luminosity LHC era

*Tuesday, May 23, 2017 5:42 PM (18 minutes)*

In the high luminosity era of the Large Hadron Collider (HL-LHC), the instantaneous luminosity is expected to reach unprecedented values, resulting in about 200 proton-proton interactions in a typical bunch crossing. To cope with this high rate, the ATLAS Inner Detector is being completely redesigned, and will be replaced by an all-silicon system, the Inner Tracker (ITk).

This new tracker will have both silicon pixel and silicon strip sub-systems. The components of the Inner Tracker will have to be resistant to the large radiation dose from the particles produced in HL-LHC collisions, and have low mass and sufficient sensor granularity to ensure a good tracking performance over the pseudo-rapidity range  $|\eta| < 4$ . In this talk, first the challenges and second possible solutions to these challenges will be discussed, i.e. designs under consideration for the pixel and strip modules, and the mechanics of local supports in the barrel and endcaps.

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**Session Classification:** R2-Experimental detector systems(3)

**Track Classification:** Experimental detector systems