

Module development for the ATLAS ITk Pixel Detector

During operation the High Luminosity Large Hadron Collider (HL-LHC) will achieve unparalleled instantaneous luminosity, leading to approximately 200 proton-proton interactions during a bunch crossing. The existing ATLAS Inner Detector will be superseded by an entirely silicon-based system known as the Inner Tracker (ITk). The ITk's innermost section will incorporate a cutting-edge pixel detector with diverse silicon sensor technologies being used across the five barrel and end-cap layers.

As initial modules have been assembled with the prototype ITkPix readout chip, a variety of aspects are under investigation. These range from production-related ones such as bump bonding, to assembly methods of dedicated wire-bond mechanical protection, layout-related aspects such as the distribution of data links amongst several chips and modules.

The talk will present results of several such studies, directly affecting the module production for the ATLAS ITk Pixel detector.

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