

Module development for the ATLAS ITk Pixel Detector

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In HL-LHC operation the instantaneous luminosity will reach unprecedented values, resulting in about 200 proton-proton interactions in a typical bunch crossing. The current ATLAS Inner Detector will be replaced by an all-silicon system, the Inner Tracker (ITk). The innermost part of ITk will consist of a state-of-the-art pixel detector.

Several different silicon sensor technologies will be employed in the five barrel and endcap layers.

Based on first modules assembled using the RD53A prototype readout chip, numerous issues are being studied. These include production issues like bump bonding of large area, thin modules, as well as layout issues like optimization of the bandwidth and sharing of links between multiple chips and modules. The talk will present results of many of these studies, which directly impact the construction and assembly of modules with using the first production version of the readout chip ITKpixV1, which will become available shortly

Institute

TU Dortmund

Your name

Jens Weingarten

email

jens.weingarten@tu-dortmund.de

Title

Nationality

Primary author: WRAIGHT, Kenneth

Presenter: WRAIGHT, Kenneth

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