Contribution ID: **555** Type: **Poster**

Development and evaluation of prototypes for the ATLAS ITk pixel detector

Friday, 8 July 2022 20:10 (20 minutes)

The ATLAS tracking system will be replaced by an all-silicon detector for the HL-LHC upgrade.
The innermost tracking system will consist of 5 barrel layers and several end-cap disks, equipped with pixel modules. The pixel detector will operate in most challenging environment, which imposes unprecedent requirements on the radiation hardness and readout speed. A serial power scheme will be used for the pixel detector resulting in the reduction of the radiation length and power consumption in cables. Moving from the current parallel powering scheme of the detector to the serial powering scheme requires the development of new detector control system, constant current sources, and new front-end electronics with shunt regulators. Prototypes of these elements are built to prove the concept; multiple system-level tests are done with serial powering of pixel modules. The evaluation of both the readout of multiple modules in series and their mechanical integration are further steps in the prototyping program. In this contribution, we present results of recent readout tests of modules powered in series as well as procedures developed for the integration process.

In-person participation

Yes

Primary author: MOSER, Brian (CERN)

Presenter: MOSER, Brian (CERN)

Session Classification: Poster Session

Track Classification: Operation, Performance and Upgrade (Incl. HL-LHC) of Present Detectors