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Prototyping Serial Powering with RD53A and ITkPixV1

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The high luminosity upgrade for the Large Hadron Collider at CERN requires a complete overhaul of the current inner detectors of ATLAS and CMS. These new detectors will consist of all-silicon tracking detectors. A serial powering scheme has been chosen in order to cope with the various constraints of the new detectors. In order to verify this new powering scheme and provide input for various system aspects, efforts are ongoing to set up a first larger prototype for serial powering using modules based on the new readout chips developed in 65 nm CMOS technology by the RD53 collaboration, RD53A and ITkPixV1. In particular, a serial powering stave consisting of up to 8 quad modules, either RD53A with planar sensor or ITkPixV1.1 without a sensor, has been set up in Bonn. This contribution covers the results obtained with RD53A modules and presents first measurements with a full ITkPixV1.1 serial powering chain, with emphasis on the electrical characterization of modules in a serial chain with representative services and power supplies.

In-person participation

Yes

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