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The design and evaluation tests of the custom step-down DC-DC converter system for ITk Strip detector.

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The ITk strip detector is a new micro-strip tracking system for the upgraded ATLAS experiment on the planned HL-LHC. The powering system for the detector modules is based on two-stage DC to DC conversion, with off-detector supplies at higher voltage, which allows for reduction of the current on the cables and ohmic loss. A custom, active patch panel system called Patch Panel 2 (PP2) is designed as a part of the powering system to be located inside the ATLAS detector between muon chambers and calorimeter. The core of the PP2 are radiation, and magnetic field tolerant step-down DC-DC converters developed to supply power for the ITk Strip Detector segments. We report on the design and tests of the PP2 system, the results of the irradiation tests as well as the Quality Control and Quality Assurance aspects and experience from first series production.

Primary experiment

ATLAS

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