

# Hybrid Circuits to Read Out the Forward Strip Inner Tracker at the ATLAS Detector for the High Luminosity LHC Upgrade

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The ATLAS Experiment will upgrade its tracking system for the High Luminosity LHC, replacing the existing tracker by an all-silicon Inner Tracker, which consists of a pixel detector surrounded by a strip detector. The forward strip detector is based on wedge shaped strip sensors with varying strip length and pitch. The strips are read out by means of low mass radiation-hard circuits, which are a flexible multi-layer copper-polyimide construction, carrying the radiation-hard read-out ASICs. The end-cap geometry requires designing 13 different circuits, with varying numbers of ASICs depending upon their radial location, as occupancy and width of the area change. This contribution discusses the multi-step R&D process that led to the final designs of the read-out electronics circuits that recently passed the Final Design Review and started the pre-production phase. We will show details on production, quality control, testing and performance of the end-cap front-end electronics circuits.

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