

# ATLAS STRIP UPGRADE

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A phased upgrade of the Large Hadron Collider (LHC) at CERN is planned. The last upgrade phase (HL-LHC) is currently foreseen in 2022-2023. It aims to increase the integrated luminosity to about ten times the original LHC design luminosity. To cope with the harsh conditions in terms of particle rates and radiation dose expected during HL-LHC operation, the ATLAS collaboration is developing technologies for a complete tracker replacement. This new detector will need to provide extreme radiation hardness and a high granularity, within the tight constraints imposed by the existing detectors and their services. An all-silicon high-granularity tracking detector is proposed.

An international R&D collaboration is working on the strip layers for this new tracker. A number of large area prototype planar detectors produced on p-type wafers have been designed and fabricated for use at HL-LHC. These prototype detectors and miniature test detectors have been irradiated to a set of fluences matched to HL-LHC expectations. An important effort has been dedicated to demonstrate the higher level of electrical and mechanical integration in the anticipated tracker structures. Several prototype modules using prototype HL-LHC readout electronics have been produced, as well as multi-module assemblies. They have allowed testing of many system aspects, including different powering options (serial power and DC-DC conversion).

This presentation shows the proposed new tracker and the design of the strips layers. The module assembly for the strip HL-LHC tracker is described, and results from silicon sensor before and after irradiation are shown. Status of the project and performance of module assemblies are summarised.