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## **Radiation-Hard Silicon Detectors and the ATLAS HL-LHC-Upgrade**

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The experiments at the Large Hadron Collider (LHC) at CERN are in need of major detector upgrades to cope with the increased luminosity of the High-Luminosity Upgrade of the LHC. In order to cope with the massive increases in track densities, event rates and radiation damage, the entire Inner Tracker of the ATLAS experiment will be replaced. This presentation outlines the huge challenges of this task, and discusses methods to increase the radiation hardness of silicon particle detectors. An overview of radiation-hard silicon detector technologies will be given.

The technological choices made for the ATLAS Upgrade will be shown and motivated, and the layout and expected performance of the new ATLAS Inner Tracker will be presented.

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