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Silicon strip tracking detector development and prototyping for the Phase-2 Upgrade of the ATLAS experiment

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In about ten years from now, the Phase-2 upgrade of the LHC is planned. This will result in a severe radiation dose and high particle rates for the multipurpose exeperiments because of a foreseen luminosity of ten times higher the LHC design luminosity. Several detector components will have to be upgraded in the experiments. In the ATLAS experiment the current inner detector will be replaced by an all silicon tracking detector aiming for high performance. The talk will present the development and the latest prototyping of the upgrade silicon strip tracking detector.
Its layout foresees low mass and modular double-sided structures for the barrel and forward region. Silicon sensors and readout electronics, so-called modules, are planned to be assembled double-sided on larger carbon-core structures. The modularity allows assembly and testing at multiple sites.
Many components need to be developped and their prototyping towards full-size components is ongoing. New developments and test results will be presented. Both silicon sensors and latest electronic readout components and assembly procedures will be shown.
The talk will also discuss the experience with the prototyping and give an outlook towards final production.

Collaboration

The ATLAS Collaboration

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