

Upgrade physics prospects at the ATLAS Experiment

The High Luminosity run of the Large Hadron Collider (LHC) will start in 2026 and aims to collect 3000 fb^{-1} of proton-proton collisions by 2037. This enormous dataset will increase the discovery potential of the LHC and allow precision measurements of Standard Model processes. However, the very high instantaneous luminosity of $5 - 7 \times 10^{34} \text{ cm}^{-2} \text{ s}^{-1}$ poses serious challenges in terms of high “pile-up” of 140 or 200 overlapping proton-proton collisions per bunch crossing inside the ATLAS detector.

In this talk, I will summarise the planned ATLAS detector upgrades and the analysis techniques, including pile-up mitigation, for High Luminosity-LHC running. I will also present the physics prospects for the ATLAS experiment, including results for precision measurements of the 125 GeV Higgs boson and the top quark, for vector boson scattering and the physics reach for supersymmetric and other beyond-the-Standard-Models.

I intend to submit my contribution for the proceedings

No

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