

Beyond the standard model physics at the HL-LHC

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The Large Hadron Collider (LHC) has been successfully delivering proton-proton collision data at the unprecedented center of mass energy of 13 TeV.

An upgrade is planned to increase the instantaneous luminosity delivered by the LHC in what is called HL-LHC, aiming to deliver a total of about 3000/fb of data to the ATLAS detector at a center of mass energy of 14 TeV. To cope with the expected data-taking conditions ATLAS is planning major upgrades of the detector.

In this contribution we present an overview of the physics reach expected for a wide range of searches for beyond Standard Model physics at the HL-LHC for the ATLAS experiment, ranging from standard-candle processes as Z' to leptons to other resonance and non-resonance searches; prospects for long-lived particle and other exotic benchmark scenarios will also be presented. Particular focus would be given to implications for non-supersymmetric models.

Such studies formed the basis of the ATLAS Collaboration input to one of the chapters of the recent HL/HE-LHC Yellow-Report. An executive summary of this report was then submitted as input to the European Strategy process.

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