Contribution ID: **79** Type: **not specified**

High-luminosity LHC prospects with the upgraded ATLAS detector

Thursday 14 April 2016 09:46 (20 minutes)

Run-I at the LHC was very successful with the discovery of a new boson with properties compatible with those of the Higgs boson predicted by Standard Model. Precise measurements of the boson properties, and the discovery of physics beyond the Standard Model, are primary goals of the just restarted LHC running at 13 TeV collision energy and all future running at the LHC. The physics prospects with a pp centre-of-mass energy of 14 TeV are presented for 300 and 3000 fb-1 at the high-luminosity LHC. The ultimate precision attainable on measurements of the couplings of the 125 GeV boson to elementary fermions and bosons is discussed, as well as perspectives on the searches for partners associated with it.
Supersymmetry is one of the best motivated extensions of the Standard Model. The current searches at the LHC have yielded sensitivity to TeV scale gluinos and 1st and 2nd generation squarks, as well as to 3rd generation squarks and electro-weakinos in the hundreds of GeV mass range. Benchmark studies are presented to show how the sensitivity improves at the future LHC runs. A considerable fraction of the parameter space for a wide variety of other BSM models has been probed with the 8 TeV data and initial 13 TeV data. The prospects of searches for new heavy bosons and dark matter candidates at 14 TeV are explored as well as the sensitivity of searches for anomalous top decays and di-boson production.
For all these studies, a parameterised simulation of the upgraded ATLAS detector is used, taking into account the expected pileup conditions.

Primary author: Prof. ORESTANO, Domizia (Roma Tre University and INFN)

Presenter: SLAWINSKA, Magdalena (Nikhef National institute for subatomic physics)

Session Classification: WG7 Future Experiments

Track Classification: Future Experiments