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ATLAS High Luminosity LHC studies

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The High-Luminosity LHC aims to provide a total integrated luminosity of 3000/fb from proton-proton collisions at $\sqrt{s} = 14$ TeV over the course of ~ 10 years, reaching instantaneous luminosities of up to $L = 7.5 \times 10^{34}/\text{cm}^2/\text{s}$, corresponding to an average of 200 inelastic p-p collisions per bunch crossing ($\mu = 200$). Fast simulation studies have been carried out to evaluate the prospects of various benchmark physics analyses to be performed using the upgraded ATLAS detector with the full HL-LHC dataset. The performance of the upgrade has been estimated in full simulation studies, assuming expected HL-LHC conditions. This talk will focus on the results of physics prospects studies for benchmark analyses involving in particular boosted hadronic objects (e.g. $t\bar{t}$ resonances, HH resonances (HH \rightarrow bbbb) and dijet resonances), and on results of Jet/EtMiss studies of jet performance and pileup mitigation techniques that will be critical in HL-LHC analyses.

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Session Classification: Future Colliders