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Development of novel experimental techniques to improve the understanding of the Higgs sector by the ATLAS experiment

Thursday, 7 July 2022 12:30 (15 minutes)

With the full Run 2 pp collision dataset collected at 13 TeV by the ATLAS experiment, it is now possible to perform detailed measurements of Higgs boson properties in many production and decay modes. In many cases, novel experimental techniques were developed to allow for these measurements. This talk presents a review of a representative selection of such novel techniques, including: embedding of simulated objects in data; special object weighting techniques to maximize statistical precision; developing special trigger, reconstruction, and identification algorithms for non-standard objects; special treatments of sources of two-point theory systematic uncertainties; special developments in likelihood-based fitting techniques; various innovative machine-learning approaches.

In-person participation

Yes

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