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Axion-Like-Particle Search Using Machine Learning for the Signal Sensitivity Optimization with Run-2 LHC Data Recorded by the ATLAS Experiment

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The neutral Standard Model Higgs boson was discovered in 2012 at CERN, and the search for further particles of extended models continues. In particular, the search for an Axion-Like-Particle (ALP). Using machine learning technologies, this analysis addresses the separation of ALP production from unwanted background reactions. In this project, the Run-2 data from the ATLAS detector are used and the efficiency as well as the significance of the machine learning algorithm is optimized as a function of the theoretical ALP mass.

Author: MATOUSEK, Ondrej (Czech Technical University in Prague (CZ))

Presenter: MATOUSEK, Ondrej (Czech Technical University in Prague (CZ))

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