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Learning new physics with a (kernel) machine

Tuesday, 30 April 2024 13:33 (3 minutes)

The lack of new physics discoveries at the LHC calls for an effort to to go beyond model-driven analyses. In this talk I will present the New Physics Learning Machine, a methodology powered by machine learning to perform a signal-agnostic and multivariate likelihood ratio test (arXiv:2305.14137). I will focus on an implementation based on kernel methods, which is efficient and scalable while maintaining high flexibility (arXiv:2204.02317). I will present recent results on model selection and multiple testing for improved chance of detection, as well as applications to model-independent searches of new physics, online data quality monitoring (arXiv:2303.05413), and the evaluation of simulators and generative models.

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