Laboratoire LEPRINCE-RINGUET
Ecole polytechnique IN2P3/CNRS

Webinaire

Two Machine Learning techniques for Model Independent New Physics searches at the LHC

I will present two Machine Learning methods for addressing the problem of model-independent searches for New Physics, at the Large Hadron Collider (LHC). Firstly, we propose a collective anomaly detection method that uses a parametric approach within the semi-supervised learning paradigm. This approach uses penalized likelihood to simultaneously perform appropriate variable selection and detect possible collective anomalous behavior in data with respect to a given background sample. Secondly, we present preliminary studies on modeling background and detecting generic signals in invariant mass spectra using Gaussian processes (GP) with no mean prior information. Two methods that use GP were tested in two datasets collected at the ATLAS experiment. Our study is a first step towards a method that takes advantage of GPs as a modeling tool that can be applied to several signatures in a more model independent setup.

Fabricio JIMENEZ MORALES
LLR

Lundi 20 avril
14h00

seminaires@llr.in2p3.fr

Responsables séminaires

Rémi Adam
Jean-Baptiste Sauvan