Contribution ID: **67** Type: **not specified**

New Physics Searches at LHC using Anomaly Detection Methods

The Standard Model (SM) of Particle Physics is notably descriptive and predicted new particles well in advance. Still, there is paramount evidence for the need of New Physics beyond the Standard Model (BSM), Conventionally, searches are driven by specific signals and theory assumptions, preventing a complete exclusion of new phenomena. A new paradigm is to use Anomaly Detection techniques in order to conduct more generic analyses, able to discover any event unforeseen by the SM.

In the spirit of implementing model agnostic searches for New Physics, in this work we will systematically compare various Anomaly Detection methods. The purpose is to analyze the performance of different methods when applied to the same benchmark signals using identical evaluation metrics. This involves exploring variations and combinations of methods found in the literature. We will give focus our attention exploring clustering and graph network methods during this project.

Authors: GOUVEIA CIPRIANO PIEDADE MOREIRA, Ines Isabel (LIP - Laboratorio de Instrumentação e Física Experimental de Partículas (PT)); CASTRO, Nuno (LIP and University of Minho (PT)); COSTA BATALHA PEDRO, Rute (LIP - Laboratorio de Instrumentação e Física Experimental de Partículas (PT))

Presenter: GOUVEIA CIPRIANO PIEDADE MOREIRA, Ines Isabel (LIP - Laboratorio de Instrumentação e Física Experimental de Partículas (PT))