Contribution ID: **22**   Type: **Poster**

Detect New Physics with Deep Learning Trigger at the LHC

Thursday 23 April 2020 08:00 (20 minutes)

The Large Hadron Collider has an enormous potential of discovering physics beyond the Standard Model, given the unprecedented collision energy and the large variety of production mechanisms that proton-proton collisions can probe. Unfortunately, only a small fraction of the produced events can be studied, while the majority of the events are rejected by the online filtering system. One is then forced to decide upfront what to search and miss a new physics that might hide in unexplored "corners" of the search region. We propose a model-independent anomaly detection technique, based on deep autoencoders, to identify new physics events as outliers of the standard event distribution in some latent space. We discuss how this algorithm could be designed, trained, and operated within the tight latency of the first trigger level of a typical general-purpose LHC experiment.

Consider for young scientist forum (Student or postdoc speaker)

Yes

Second most appropriate track (if necessary)

Novel approaches and algorithms, and theoretical analysis

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