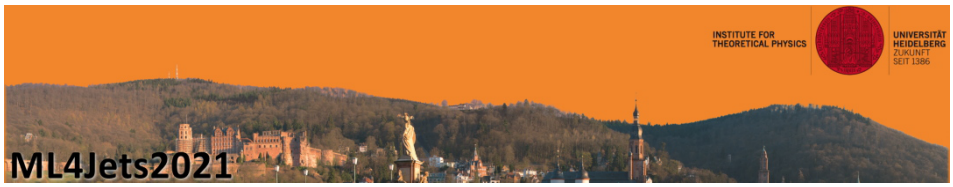

Contribution ID: **57** Type: **not specified**

High-dimensional Anomaly Detection with Radiative Return in e+e- Collisions

Tuesday 6 July 2021 14:00 (20 minutes)

Experiments at a future e^+e^- collider will be able to search for new particles with masses below the nominal centre-of-mass energy by analyzing collisions with initial-state radiation (radiative return). We show that machine learning methods based on semisupervised and weakly supervised learning can achieve model-independent sensitivity to the production of new particles in radiative return events. In addition to a first application of these methods in e^+e^- collisions, our study is the first to combine weak supervision with high-dimensional information by deploying a deep sets neural network architecture. We have also investigated some of the experimental aspects of anomaly detection in radiative return events and discuss these in the context of future detector design.

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