Contribution ID: **138** Type: **Theory poster**

Study of energy deposition patterns in hadron calorimeter for prompt and displaced jets using convolutional neural network

Thursday 10 June 2021 18:45 (1 hour)

Sophisticated machine learning techniques have promising potential in search for physics beyond Standard Model (BSM) in Large Hadron Collider (LHC). Convolutional neural networks (CNN) can provide powerful tools for differentiating between patterns of calorimeter energy deposits by prompt particles of Standard Model and long-lived particles predicted in various models beyond the Standard Model. We demonstrate the usefulness of CNN by using a couple of physics examples from well motivated BSM scenarios predicting long-lived particles giving rise to displaced jets. Our work suggests that modern machine-learning techniques have the potential to discriminate between energy deposition patterns of prompt and long-lived particles, and thus, they can be useful tools in such searches.

Authors: Prof. BHATTACHERJEE, Biplob (Indian Institute of Science, Bengaluru); Dr MUKHERJEE, Swagata (Rheinisch Westfaelische Tech. Hoch. (DE)); Ms SENGUPTA, Rhitaja (Indian Institute of Science, Bengaluru)

Presenter: Ms SENGUPTA, Rhitaja (Indian Institute of Science, Bengaluru)

Session Classification: Poster Session

Track Classification: TeV-Scale BSM