Searching for anomalies at the LHC with machine learning

Machine learning at the LHC have been mostly used for supervised tasks, either for classification or regression, while unsupervised learning techniques have been so far overlooked. I will introduce them in the context of anomaly detection, when only samples of "normal" events is available and the goal is to build an algorithm that can tag outliers of unspecified nature. Using QCD jets as background and boosted top jets and RPV gluino jets as signal, I will demonstrate the effectiveness of techniques based on autoencoders and show how they can significantly improve signal over background searches.

Wednesday, Nov. 7, 2018
2:00pm
401 Physical Sciences Building