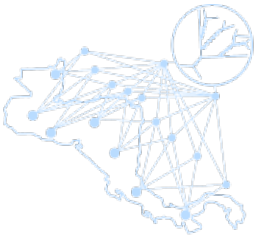

Contribution ID: **6** Type: **Session: Dark Matter and Beyond Standard Model Searches**

Beyond the Standard Model at the LHC: Using Machine Learning to Search for New Physics in All-Hadronic ttbar Final States

Monday 30 November 2020 09:00 (1 hour)

In this talk I will cover two specific Beyond the Standard Model (BSM) analyses at ATLAS and CMS, both in the all-hadronic channels: a search for a supersymmetric (SUSY) partner to the top quark decaying to a new stable neutral particle and a SM top, and the other for heavy resonances decaying to a top+antitop (ttbar) pair. The searches utilize Run 2 data of proton-proton collisions delivered by the LHC between 2015-2018. The SUSY analysis selects for events by requiring a mass window on reclustered large-radius jets to identify top quarks and large missing energy carried away by the neutral final-state SUSY particles, which can be interpreted as a Dark Matter candidate. The ttbar resonance analysis will use a neural network architecture to identify boosted tops, triggering on events with significant activity in the calorimeters. The SUSY analysis has been published recently by ATLAS and observed no significant excess over the SM expectation, excluding SUSY top partners up to 1.25 TeV. The ttbar analysis is currently underway in CMS and expects to publish the results in 2021.

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Session Classification: Plenary talk