



SPEAKER: Niki Saoulidou

TITLE: **Recent results from narrow and broad, low and high mass dijet resonance hunting with the CMS Experiment**

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ABSTRACT

New resonances decaying into pairs of quarks or gluons appear in a variety of new physics models from simple gauge extensions of the standard model to Grand Unified Theories. New gauge bosons can play the role of Dark Matter mediators. We will discuss recent CMS results of searches for such resonances using events with at least two jets in the final state. We will present searches probing a very broad range of resonance masses: all the way from 10 GeV to 8.7 TeV, utilizing different analysis and trigger strategies, jet types, and the jet reconstruction algorithms best suited for each one. We will describe in detail the analysis strategy and recent results of a high mass search based on the full Run 2 dataset and using a new data-driven background prediction method. We will show how this search is complemented by recent results from intermediate and low mass searches, some making use of the scouting technique with calorimetric jets reconstructed at the High Level Trigger, others using final states with an additional jet or photon from initial state radiation. The latter usually lead to boosted dijet topologies requiring advanced jet substructure techniques to measure the dijet invariant mass. For each search, model independent exclusions will be presented, and used to constrain various models of resonances. For the model of a dark matter mediator coupling to quarks, the excluded coupling as a function of mediator mass will be presented for all the searches. Future prospects for Run 3 and beyond will be discussed as well.