Contribution ID: **99** Type: **Young Scientist Forum**

Rebalance and Smear for predicting QCD backgrounds in searches for new physics

Friday, April 21, 2017 7:10 PM (8 minutes)

Searches for new physics in events with multiple jets and large missing transverse momentum are sensitive to a broad set of R-parity conserving SUSY models at the LHC. These searches rely on having an accurate prediction for the QCD background, especially when probing regions of the models with compressed spectra and/or regions featuring the production of light-flavor jets. A method for predicting the QCD background, called rebalance and smear, has been developed to model the multi-jet background for such searches for supersymmetry. A CMS search that makes use the rebalance and smear method in analyzing proton-proton collisions at sqrt(s)=13 TeV is presented, and constraints on various regions of the MSSM are discussed.

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Session Classification: YSF

Track Classification: Physics Beyond the Standard Model