

# LEPP JOURNAL CLUB

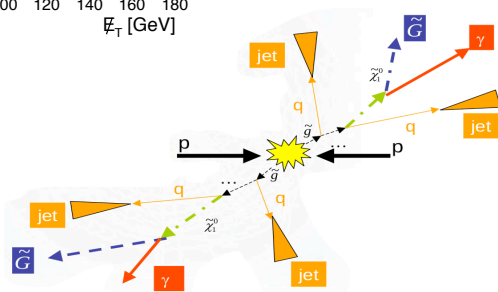
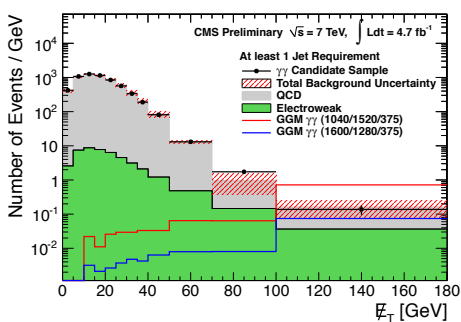
**Rachel Yohay**

**CERN**

## **SUSY Searches with Photons at CMS**



Searches in the photon(s) + missing transverse energy (MET) channels are uniquely sensitive to gauge-mediated supersymmetry breaking (GMSB), in which the neutralino is the next-to-lightest supersymmetric particle and the gravitino is the lightest. We have performed searches for GMSB in the 1-photon, 2-photon, and photon + lepton final states using 7 TeV proton-proton collisions recorded by the Compact Muon Solenoid (CMS) experiment at the Large Hadron Collider (LHC). This talk focuses on the most recent 2-photon + MET search, which used the 5 inverse femtobarn 2011 dataset. The main Standard Model backgrounds, inclusive QCD photon production and W decays in which the decay electron is mis-identified as a photon, are estimated from data control samples. No excess of events with high MET is observed, and 95% CL cross section upper limits of order 0.01(0.1) pb are found for simplified signal GMSB models in which the bino(wino) component of the neutralino dominates.



**SPECIAL  
DAY/TIME**

**Thursday**

**March 29, 1:30pm**

**401 Physical Sciences Building**

**(Refreshments 1:15pm)**

