

Journal Club

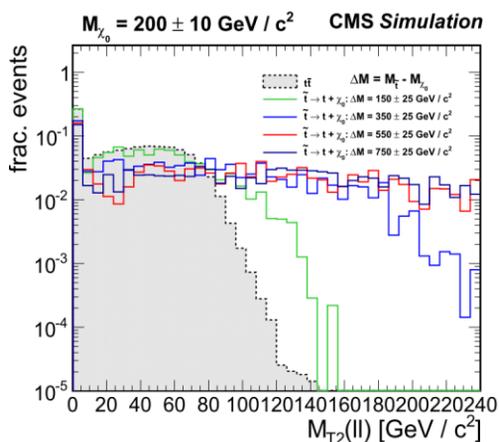
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Searches for top squark pair production at 8 TeV with the CMS detector



The supersymmetric partners of the Higgs, gluon, and third-generation squarks play key roles in the context of “natural” SUSY. Analyses that aim to maximize the constraints on these proposed new particles often must rely on specialized techniques and variables. In this seminar I will present a search with the CMS detector for the pair-production at $\sqrt{s} = 8$ TeV of top squarks decaying to the dileptonic final state. The dileptonic transverse mass is utilized as the key discriminating variable in a counting experiment, with major standard model background predicted utilizing data-driven techniques. I will also present some extensions to the dilepton search, including a statistical combination with an analogous search in the semileptonic final state as well as a strongly improved version of the dilepton search utilizing three-dimensional transverse mass shape information. Finally, I will present a selected summary of recent results detailing the performance of the missing transverse energy (MET) variable at CMS, including new MET reconstruction algorithms that significantly mitigate the adverse effects of pileup on MET resolution.



Wednesday

March 25, 2015

11:00am

301 Physical Sciences Bldg.

SPECIAL DAY!

SPECIAL TIME!