T2 Models With Squarks in RA2/b

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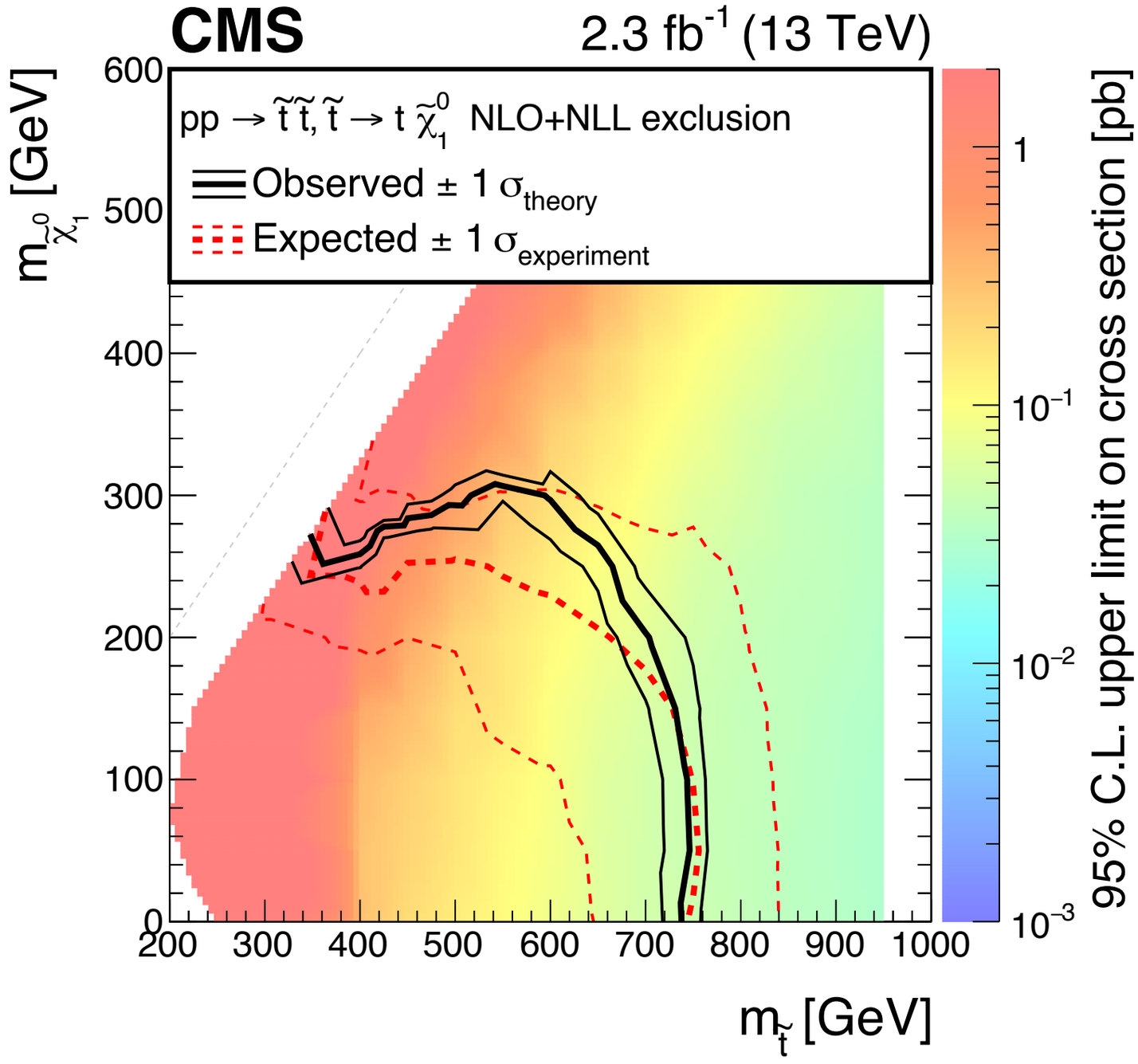
Overview

- First results with a T2 model are now available: T2tt
- I also did a very preliminary study of adding low NJets bins with NJets=[2-3]
  - For this I use the unskimmed MC Ntuples and just make signal bins with the MC yields for signal and background.
  - I use a subset of the bkg estimates that are currently available for 2.3/fb in the 72 bins
  - For the new Low NJet region, I use the same set of systematics as for NJets=[4-6] (which is more conservative)

Latest T2tt results

- Have not yet applied any signal contamination yet:
  - Contamination terms are now important because the stop production is now almost identical to TTbar
- Need to make the signal efficiency version of this plot



MC Sensitivity Test

- For now I just simply take the yields from the available MC
- Scaled Signal and Background Yields from MC to 5/fb for comparisons
- For systematics:
  - QCD add the uncertainties on the K-parameters
  - Lost-lepton/Had Tau: Statistical Unc. + NonClosure
  - Zinv: Photon Purity, DY Kinematics/Purity, Unc. NJ Extrapolation, Unc. ZGamma Ratio

Adding NJet Bins: 2-3 Jets

- For the comparison of the expected limits, I used the obs=Total Bkg and ran over the FULL SIM Points with the default binning and the binning including the low NJet region

Model	72Bins	96bins
T1tttt(1500,100)	1.53	1.53
T1tttt(1200,800)	6.11	6.11
T1bbbb(1500,100)	5.36	5.30
T1bbbb(1000,800)	1.99	1.98
T1qqqq(1400,100)	2.31	1.80
T1qqqq(1000,800)	1.54	1.44

To Do

- Make the signal efficiency plot for T2tt to understand the exclusion contours.
- Improve the sensitivity study for the T2 models with a low NJets bins:
  - Check also a fast sim point for the 72 bins with the current analysis and the MC test
- Owen's suggestion of dropping the low MHT bins in the low NJet region