pMSSM scan update
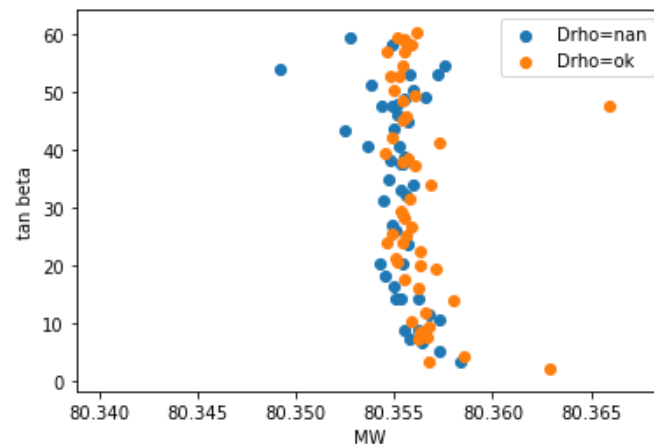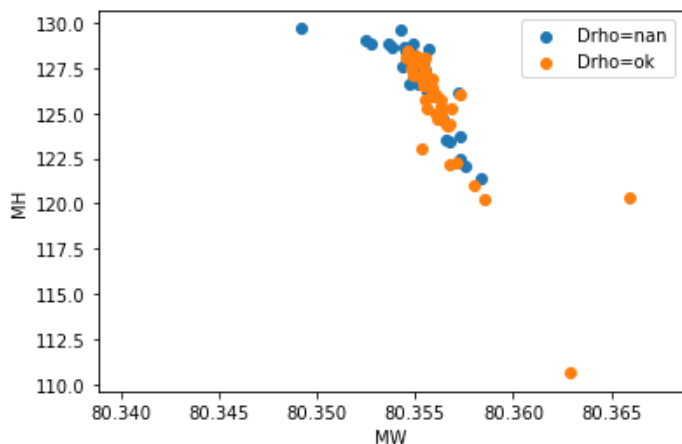
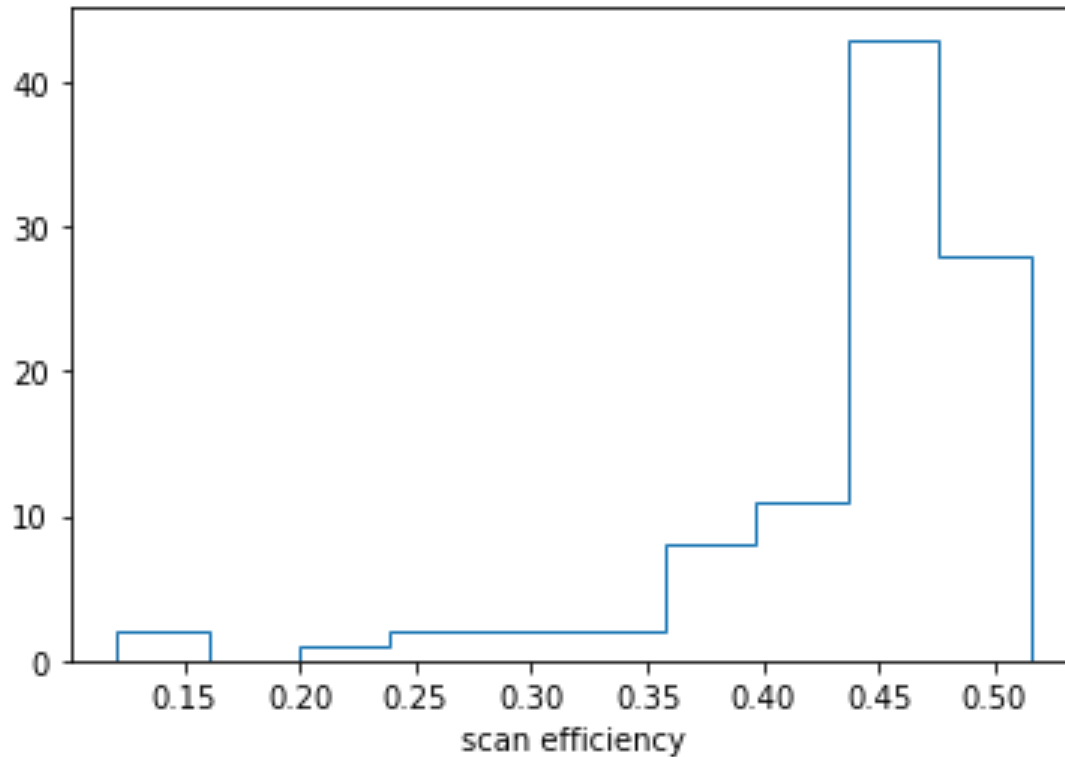Jennet Dickinson

pMSSM Meeting

August 4, 2021

Debugging runs

- Run 100 scans of 5000 points each, check logs for errors
- ✅ Added protection against atypical SPheno crash due to "problem with Higgs mass"
- ❓ Custodial symmetry Δρ is often calculated by SPheno to be NaN
  - Not a crash, but results in 0 accepted points since Δρ is in the McMC likelihood
  - Guess: problem in EW sector?

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Scan efficiency

- Debug run without Δρ in the likelihood:
  - No crashes or errors
  - Efficiency = (# accepted) / (# scanned) peaks around 45-50%

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New & coming soon

- ✅ Scan resume mode: Malte's original code included options to resume scan
  - Now have condor code formatted to do this. Can get around batch wall times by submitting multiple times and picking up where we left off!
- Superiso v4.1 ?
  - Want to investigate potential speedup
- Width of Gaussian
  - Compare distribution of mass of lightest squark for different widths
  - Make sure there are enough points with mass > threshold

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Plan: upcoming weeks

- Once the items on the previous slide are complete, will submit 100 long scans in parallel

  - ~20,000 points, more if speedup from superiso allows

- Output of these scans will be made available for study by everyone

  - Root trees and pickled SLHA files

- Scans can be extended indefinitely using resume mode

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