Neutral Heavy Higgs Generation

ALEX SCHUY

Overview

Simulated with Madgraph + Pythia + Delphes

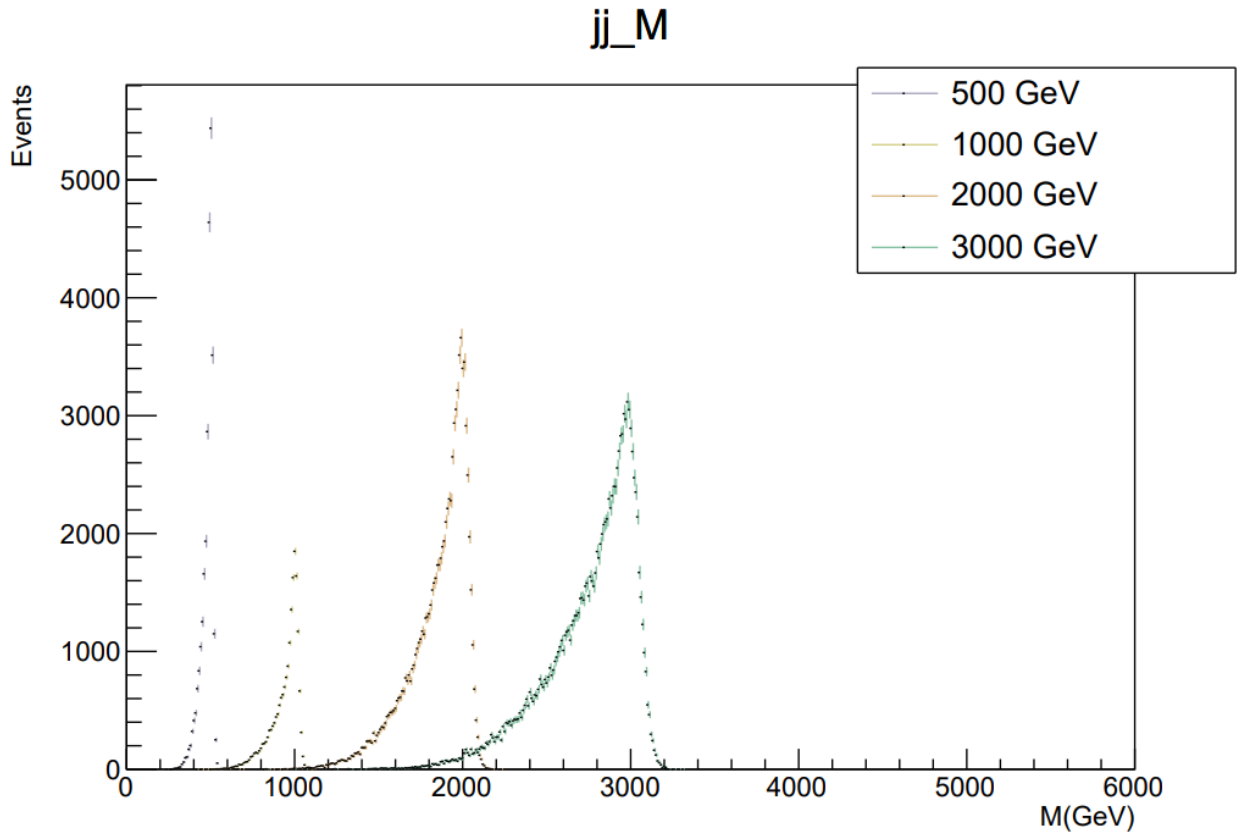
- Process: mu+ mu- > H5z vm vm~, (H5z > w+ w-, w+ > j j, w- > j j)
- 100k events
- Mass = (500, 1000, 2000, 3000) GeV
- Same delphes card, etc. as for EFT study
- Similar event selection as for nunu channel of EFT study
- 6 TeV CM energy

Mass [GeV]	Cross Section [fb]
500	38.17
1000	12.69
2000	40.41
3000	48.31

Neutral Heavy Higgs Reconstruction Efficiency

Mass [GeV]	n_leptons = 0	n_jets >= 2	M_miss > 200 GeV	|cos(theta _j)| < 0.8	M_{jets} > 40.0 GeV	pT_{jet} > 100.0 GeV
500	0.98	0.93	0.93	0.32	0.18	0.18
1000	0.99	0.96	0.96	0.39	0.37	0.37
2000	0.99	0.98	0.57	0.55	0.55	0.55
3000	1.00	0.98	0.98	0.67	0.65	0.65

Reconstructed Dijet Mass



Next Steps

- Understand cross section disparity
- Setup TRExFitter for fitting (can’t use EFT fun)
- Generate 10/30 TeV samples