



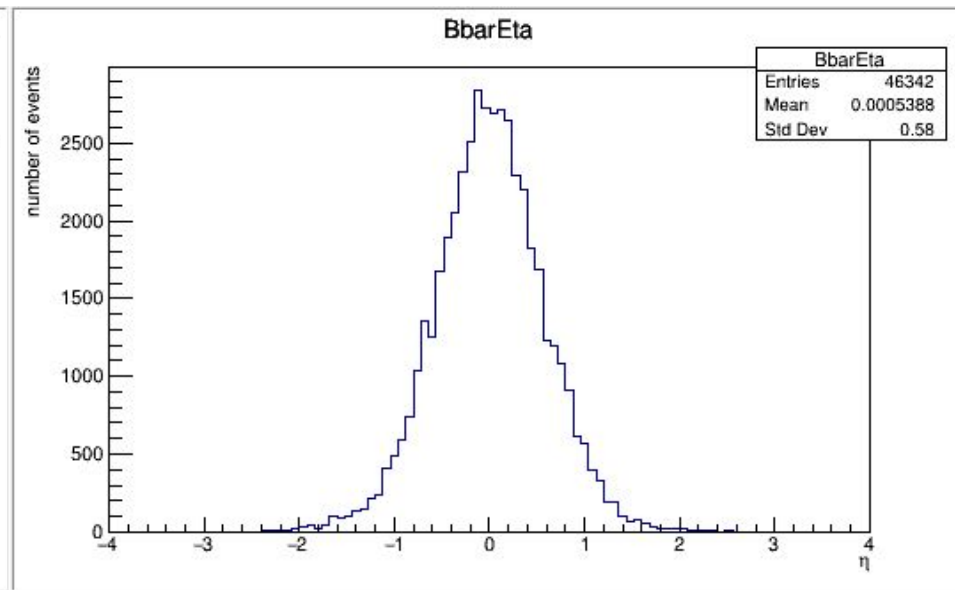
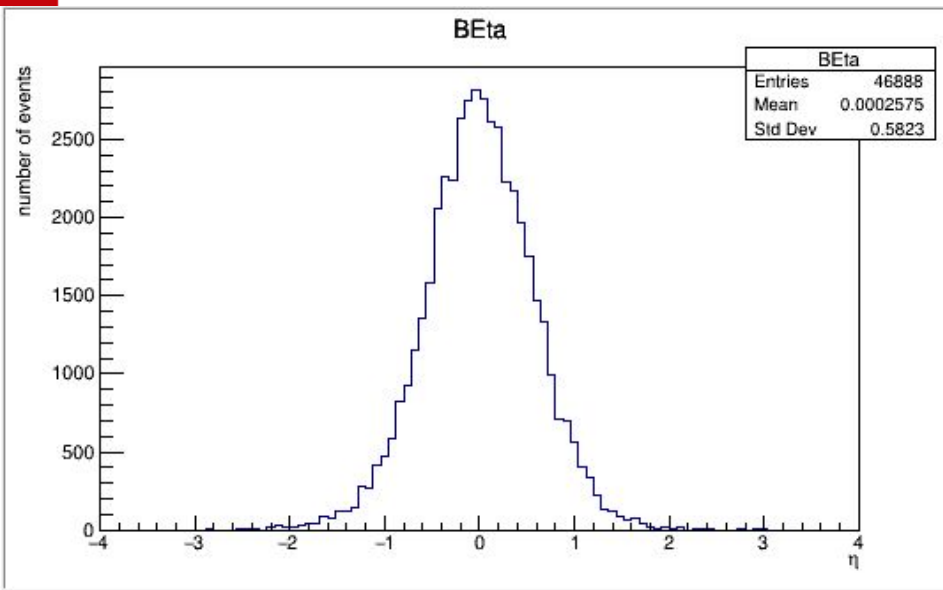
DM Studies in $\mu\mu$ monohigg $\rightarrow b\bar{b}$

By: Philip Bjorklund

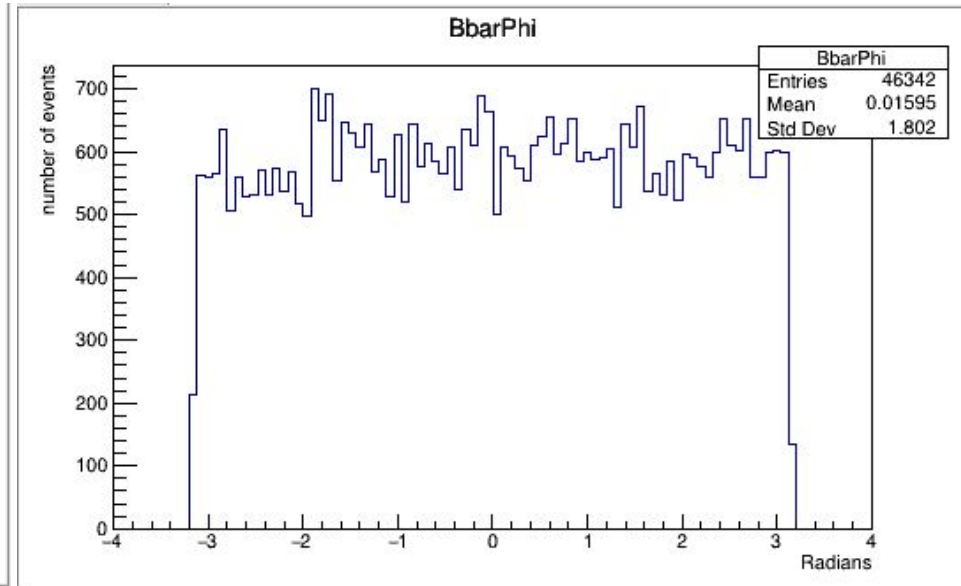
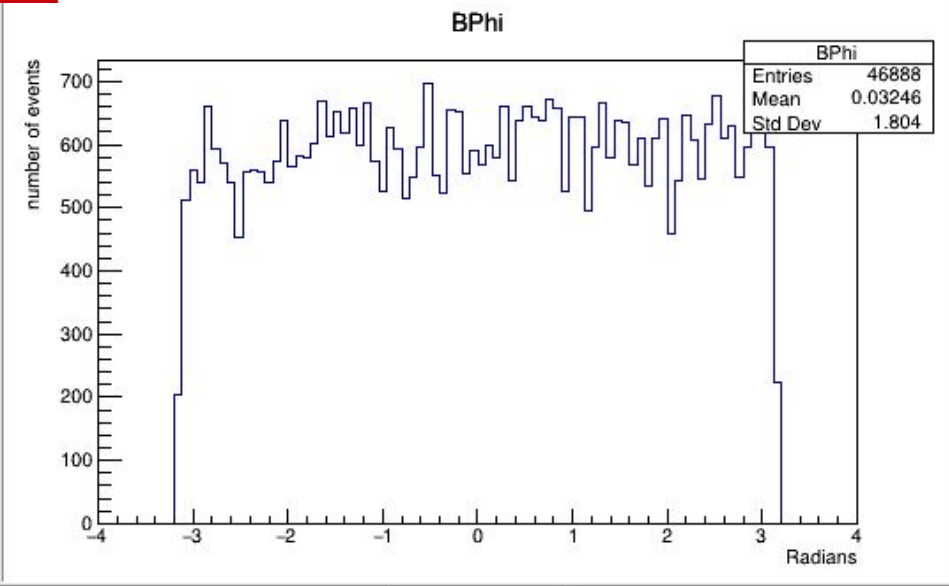
Simulation

- Model: Zp2HDM
- Signal: $\mu^+ \mu^- \rightarrow a_0 h / z, a_0 \rightarrow n_1 n_1^{\sim}, h \rightarrow b b^{\sim}$
- Background:
 - $\mu^+ \mu^- \rightarrow z j j, z \rightarrow \nu l \nu l^{\sim}$
 - $\mu^+ \mu^- \rightarrow z b b^{\sim}, z \rightarrow \nu l \nu l^{\sim}$
 - $\mu^+ \mu^- \rightarrow w j j, w^+ \rightarrow l \nu l$
 - $\mu^+ \mu^- \rightarrow w b t^{\sim}, w^+ \rightarrow l \nu l$
 - $\mu^+ \mu^- \rightarrow z j j, z \rightarrow l^+ l^-$
 - $\mu^+ \mu^- \rightarrow t t^{\sim}, t \rightarrow w^+ b, t^{\sim} \rightarrow w^- b^{\sim}$
- Ebeam1: 1500 Mass a_0 : 300 GeV
Ebeam2: 1500 Mass X ($n_1/n_1^{\sim}$): 100 GeV
 Mass Zp: 1 TeV
- Cross Section: $3.196 \cdot 10^{-12}$ pb

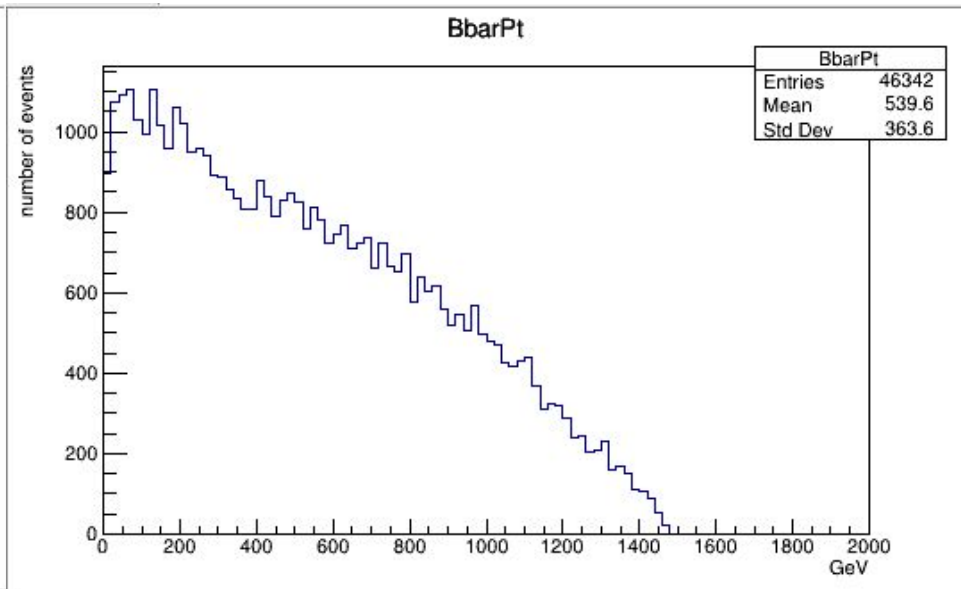
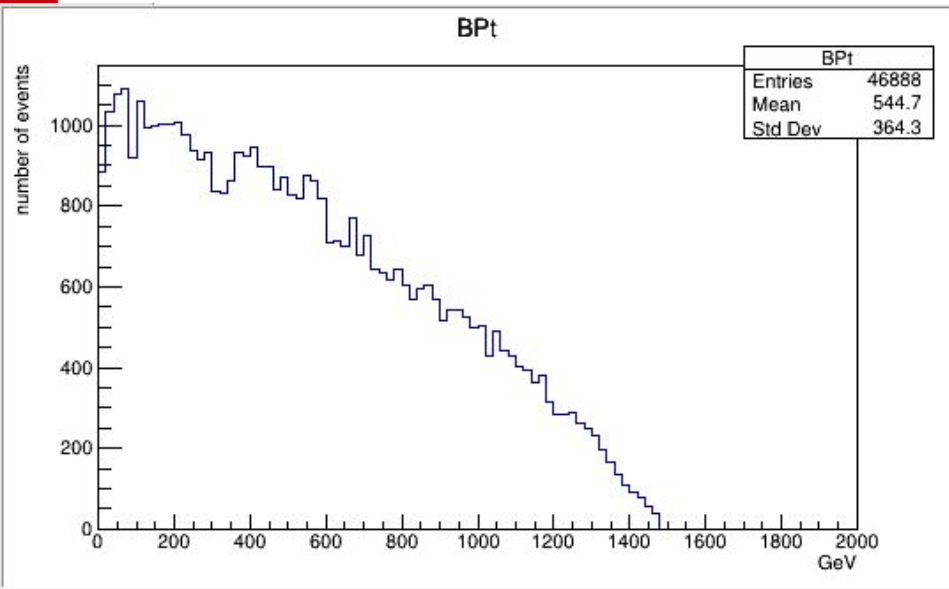
Eta for b bbar



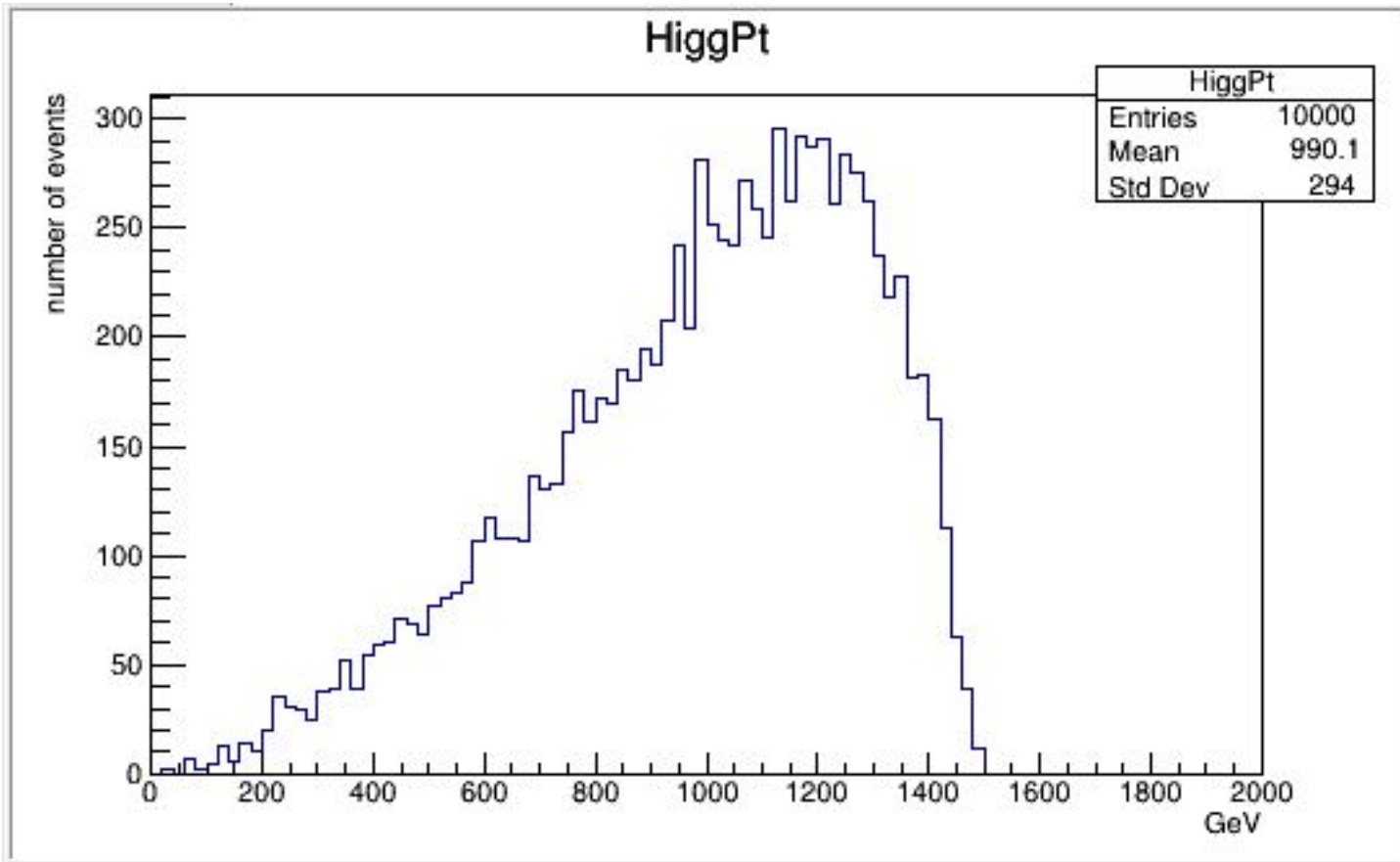
Phi for b bbar



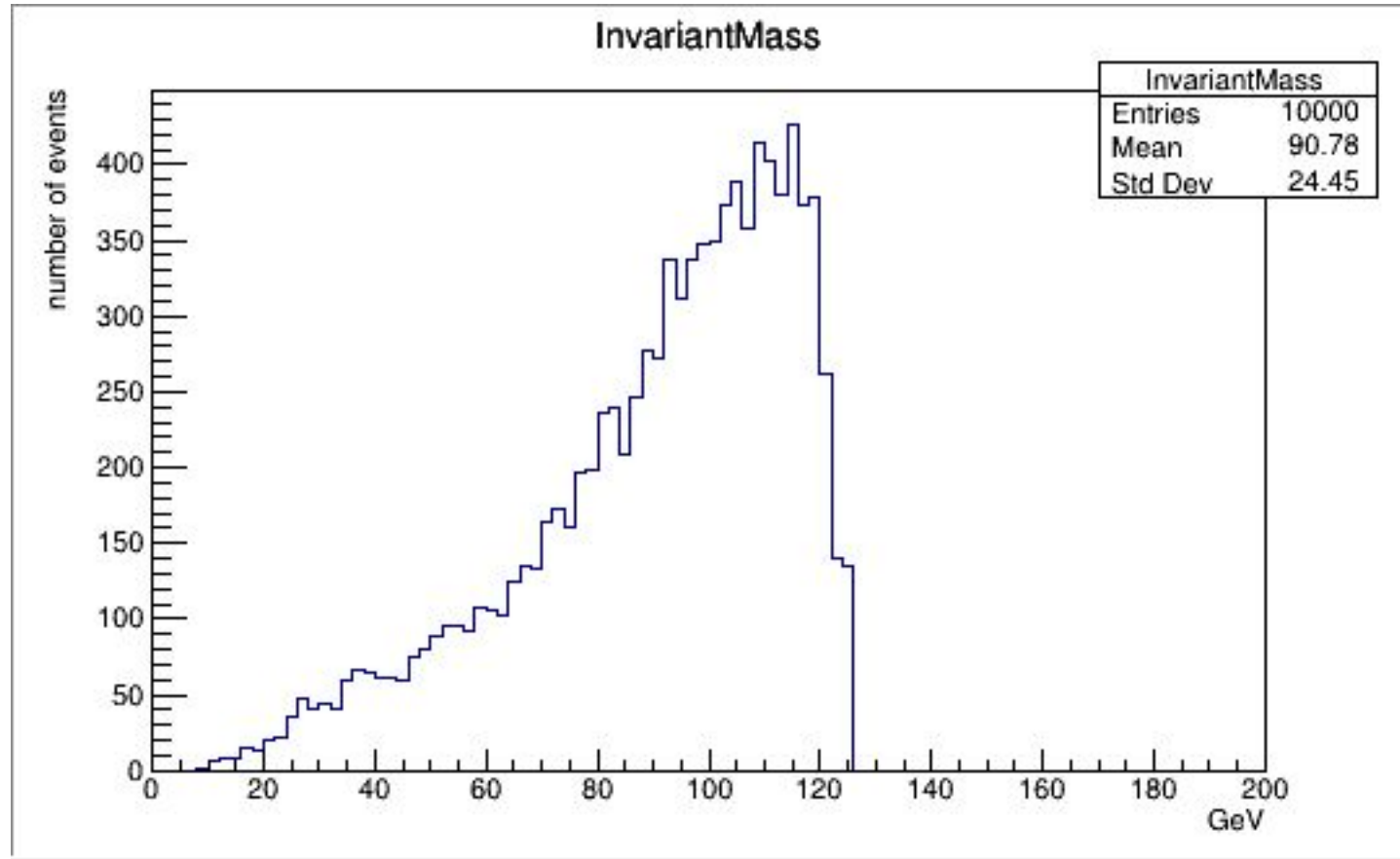
Pt for b bbar



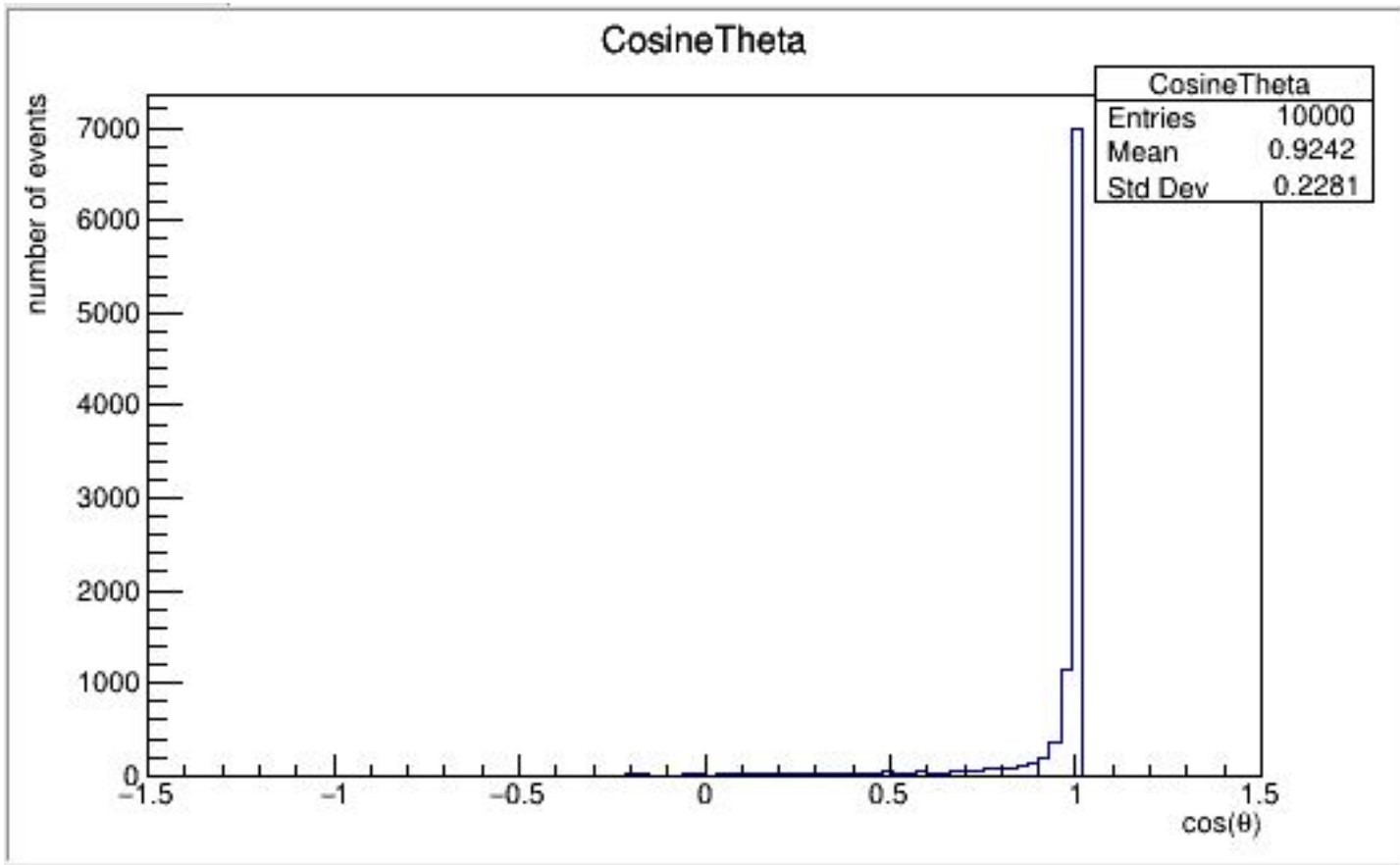
Reconstructed HiggPt



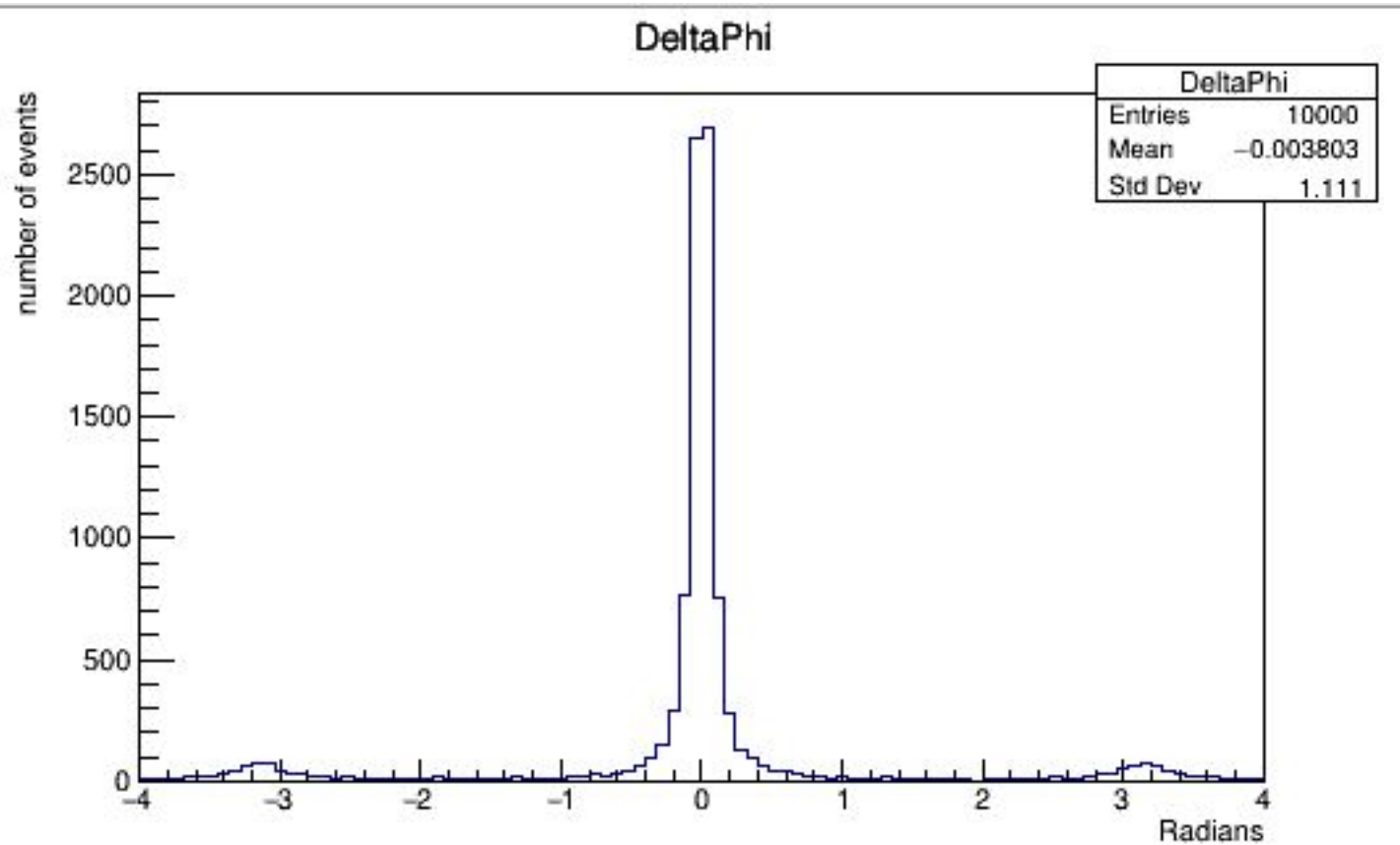
Reconstructed Invariant Mass



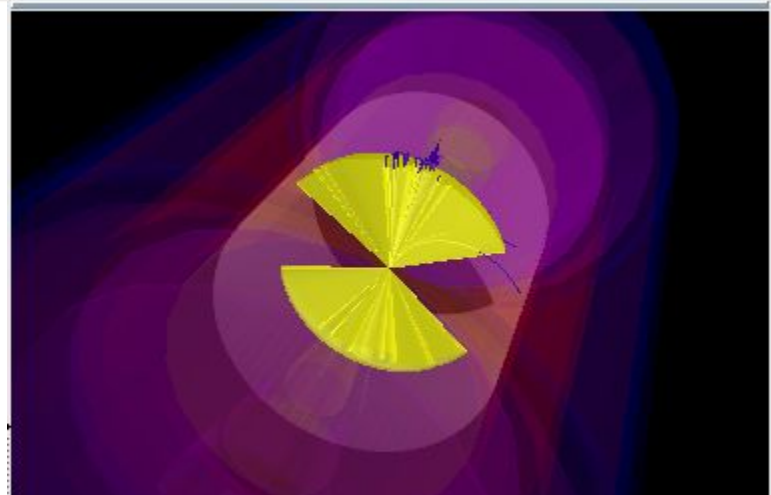
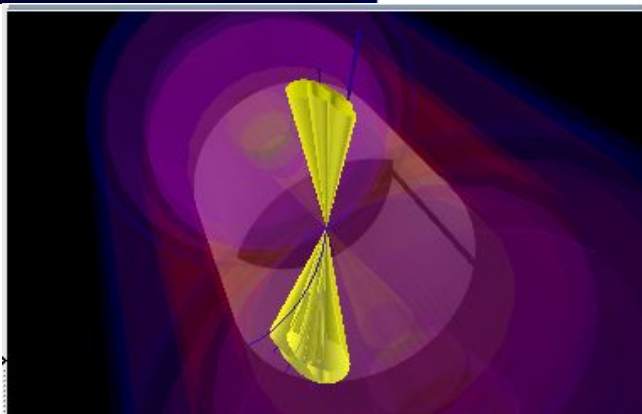
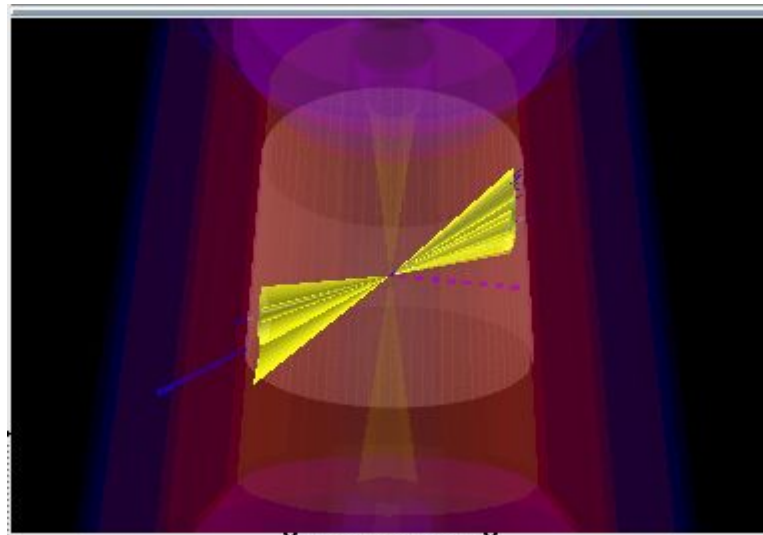
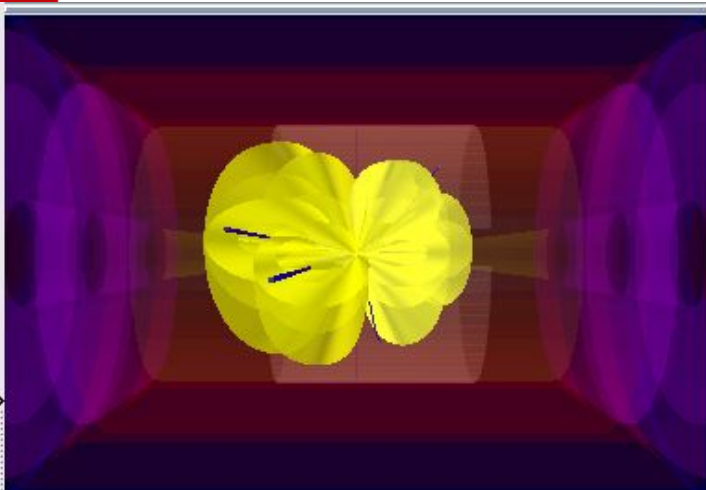
Cos(θ) between Higg and MET



$\Delta\Phi$ between Higg and MET



Event Displays



Next Steps

- Run background events
- Cuts
- Make cross-section plot with new background events