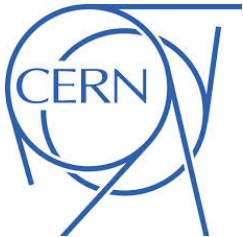# Boosted W-Boson Identification Performance
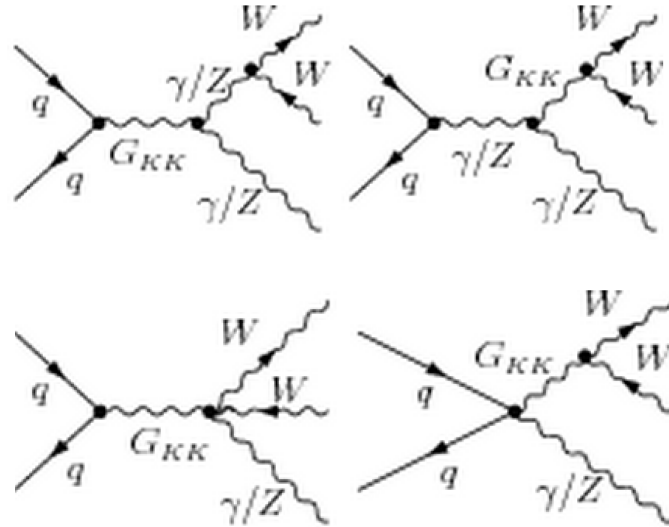
Albert Liu - The University of Michigan
Advisor: Francesco de Lorenzi - Iowa State University

The Goal (From Last Time):

- Analysis of two body decay taggers
- Taggers
  - Jet Width
  - Splitting Scale
  - N-Subjettiness
 - Planar Flow
  - Volatility
  - Mass Drop

The Method

- Sherpa event generator
- Different jet reconstruction algorithms:
  - anti-k_t reconstruction
    - Trimmed
    - Pruned
  - Cambridge-Aachen reconstruction
    - C/A filtering/splitting (BDRS)
    - Modified BDRS
    - Pruned

- Truth vs. Reconstructed Values

The Cuts

- ## Truth_eta:
  - $-1.4 < \eta < 1.4$
- ## Truth_pt:
  - $200 < pt < 350$ (GeV)
  - $350 < pt < 500$ (GeV)
  - $500 < pt < 1000$ (GeV)
- ## Mass:
  - One standard deviation within probable mass

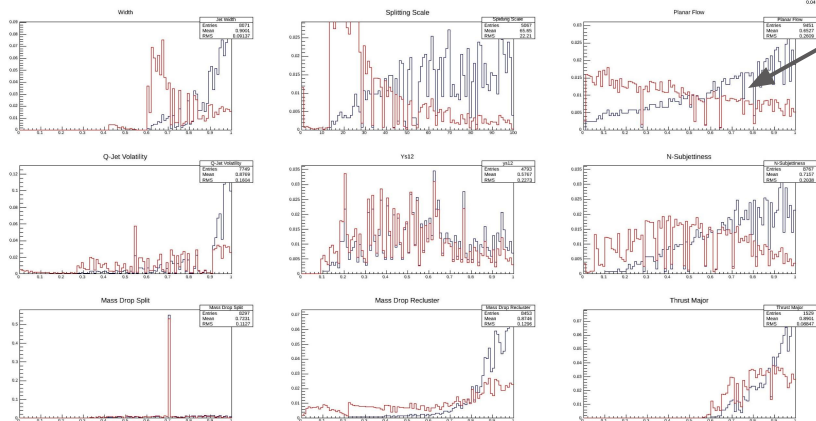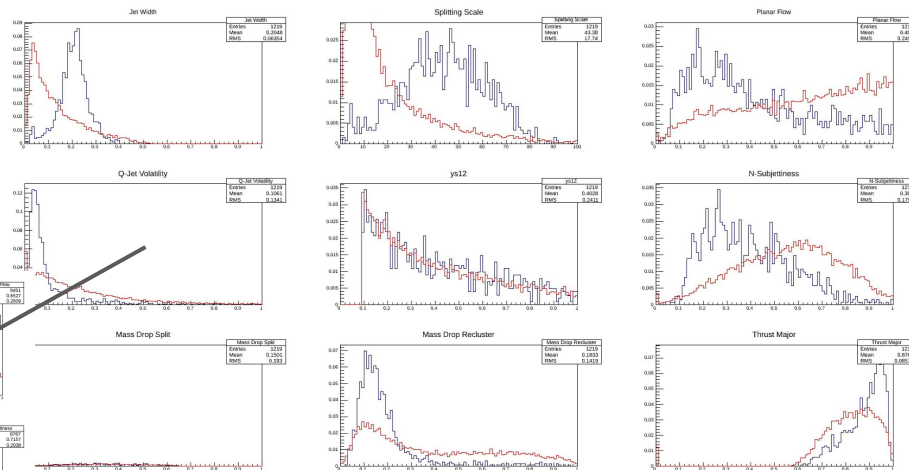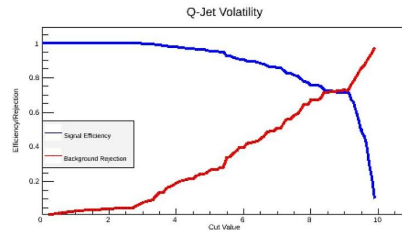| Mass	
Entries	26291
Mean	81.56
RMS	16.58
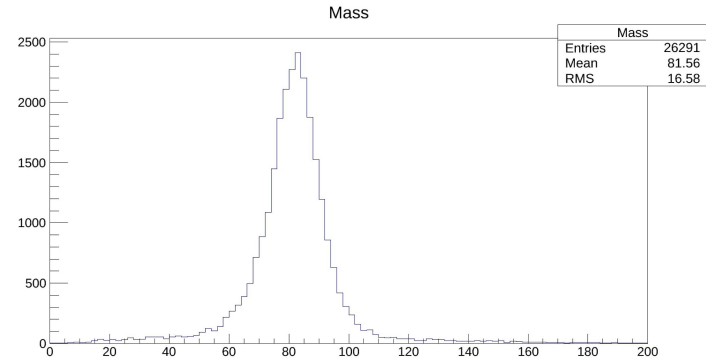
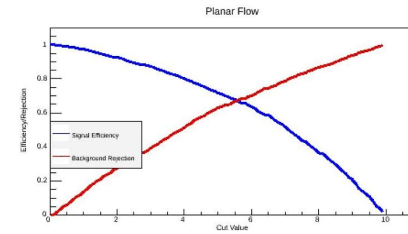Probable Mass: 80
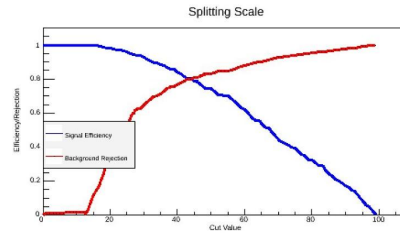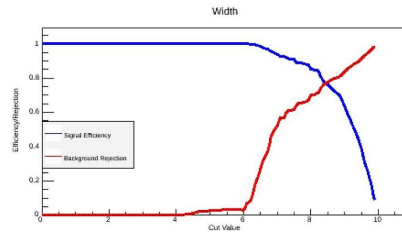σ = 8

Tagger Distributions

Original Distribution

Jet Cluster: Anti-k_t Trimmed
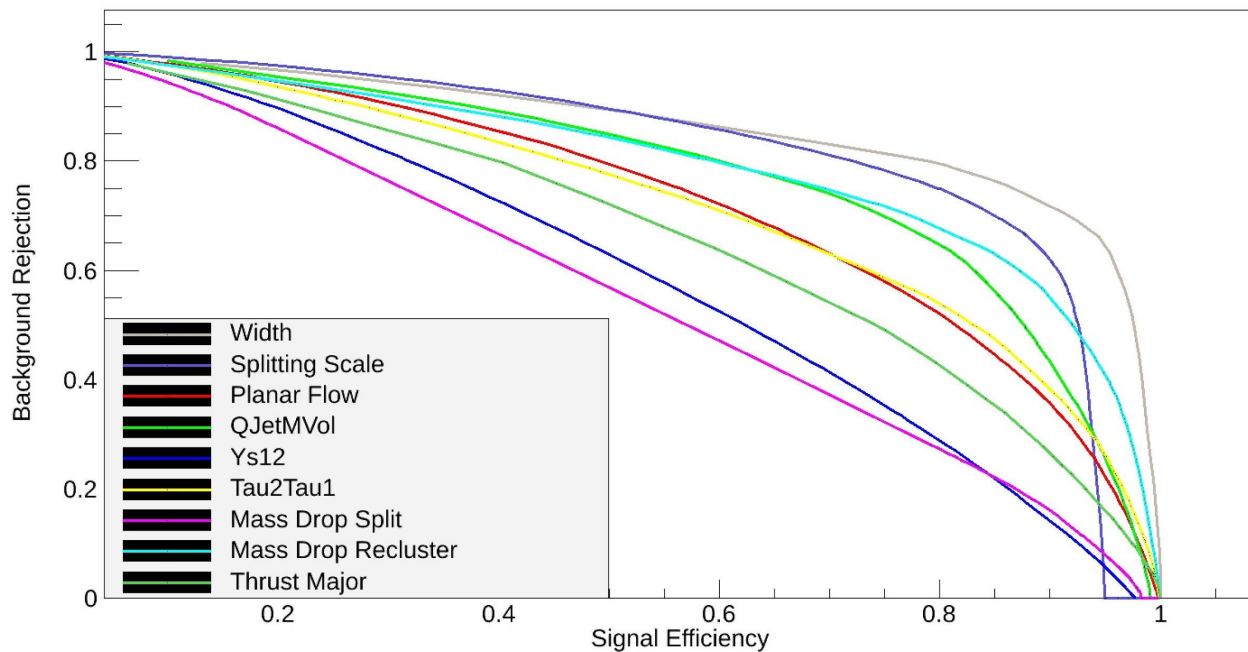
Reshuffled Distribution

Efficiency vs. Rejection
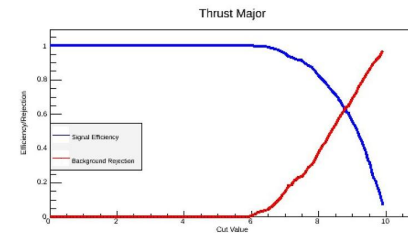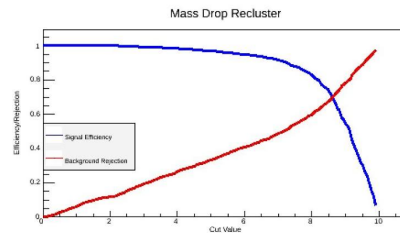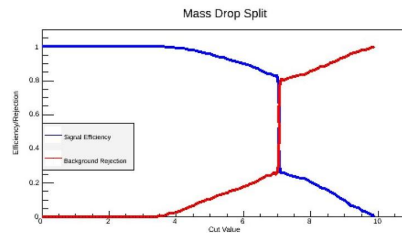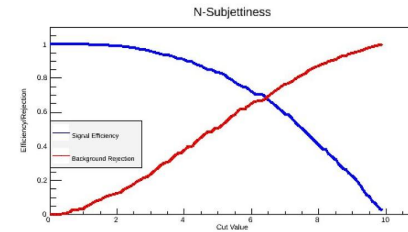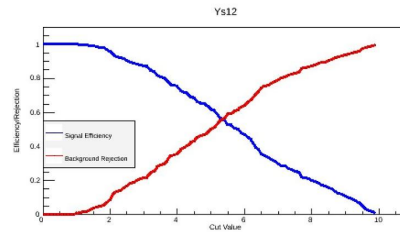
ROC Curves

AKT10LCTRIM530 - ROC Curves

What's Next?

- Mass Window Discrepancies

- Variable Correlations

- Comparison to Existing Methods

Travels!