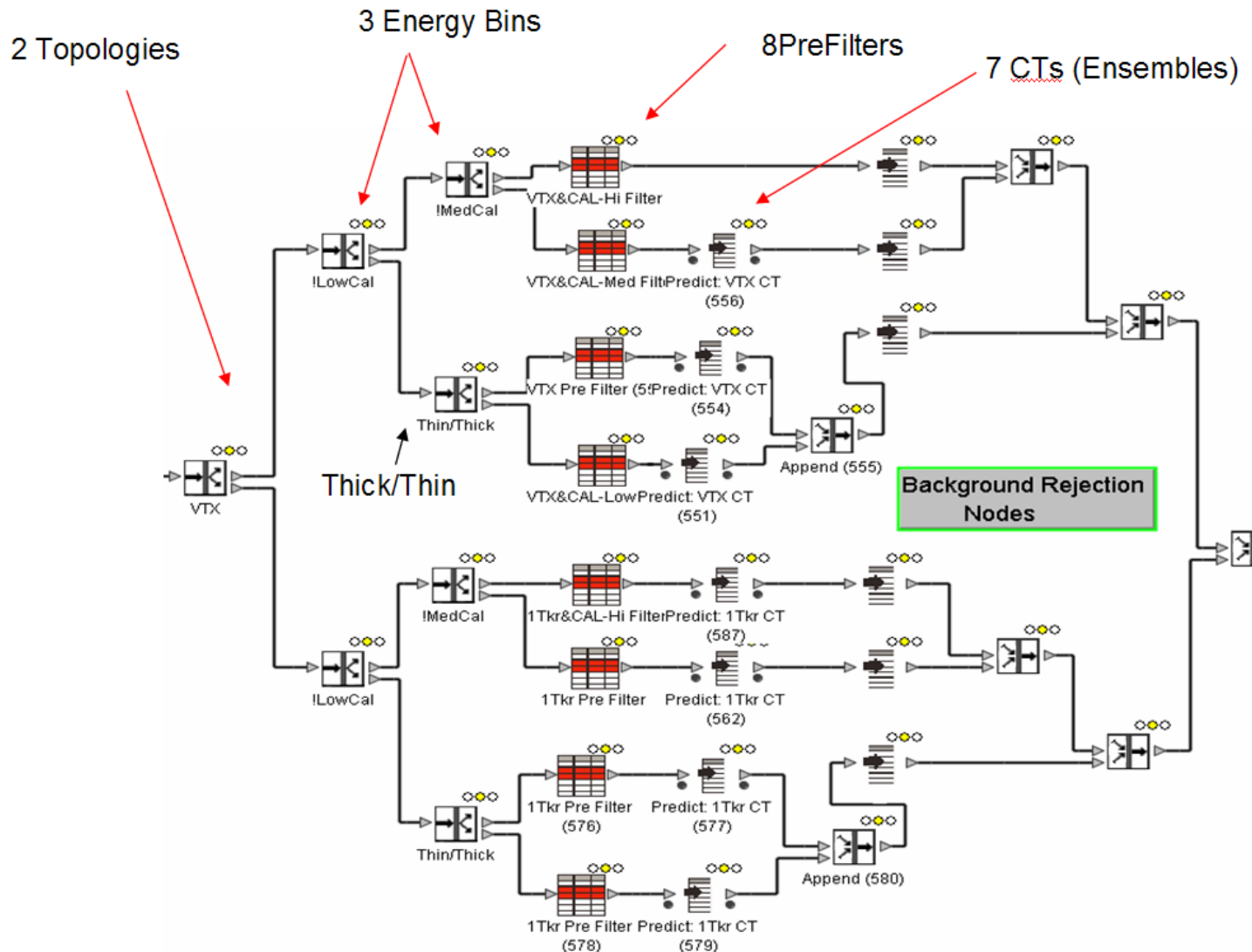


UW classification: new background rejection trees

The eight selections (from Bill)

Back Ground Rejection Analysis



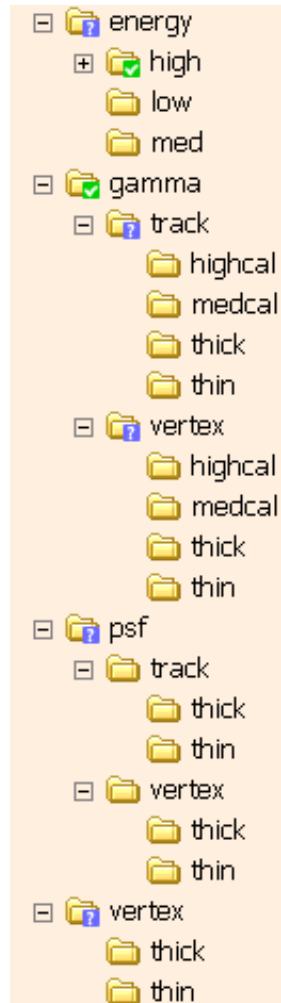
The prefilter cuts

Gamma classification	
category	prefilter: remove if true
vertex-high	$\text{AcdActiveDist} > -10 \mid \text{CalTrackAngle} > .5 \mid \text{CalTrackDoca} > 40$
vertex-med	$\text{AcdActiveDist} > -199 \mid \text{AcdRibbonActDist} > -1900 \mid \text{CalTrackDoca} > 200$
vertex-thin	$\text{AcdActiveDist} > -199 \mid \text{AcdRibbonActDist} > -1000$
vertex-thick	$\text{AcdUpperTileCount} > 0 \mid \text{AcdLowerTileCount} > 1 \mid \text{AcdRibbonActDist} > -1999$
track-high	$\text{CalTrackDoca} > 30 \mid \text{CalTrackAngle} > .3$
track-med	$\text{AcdActiveDist} > -199 \mid \text{AcdRibbonActDist} > -1900 \mid \text{CalTrackDoca} > 40 \mid \text{CalTrackAngle} > .5 \mid \text{CalXtalRatio} > .85$
track-thin	$\text{AcdActiveDist} > -199 \mid \text{AcdRibbonActDist} > -1999 \mid \text{CalTrackDoca} > 200 \mid \text{EvtECalTransRms} < .8$
track-thick	$\text{AcdActiveDist} > -199 \mid \text{AcdRibbonActDist} > -1999 \mid \text{AcdDoca} < 1999 \mid \text{CalTrackDoca} > 200 \mid \text{EvtECalTransRms} > 2.5 \mid \text{CalMaxXtalRatio} > .8 \mid \text{Tkr1FirstChisq} > 2.5 \mid \text{Tkr1ToTTrAve} > 2$

Implementation in merit

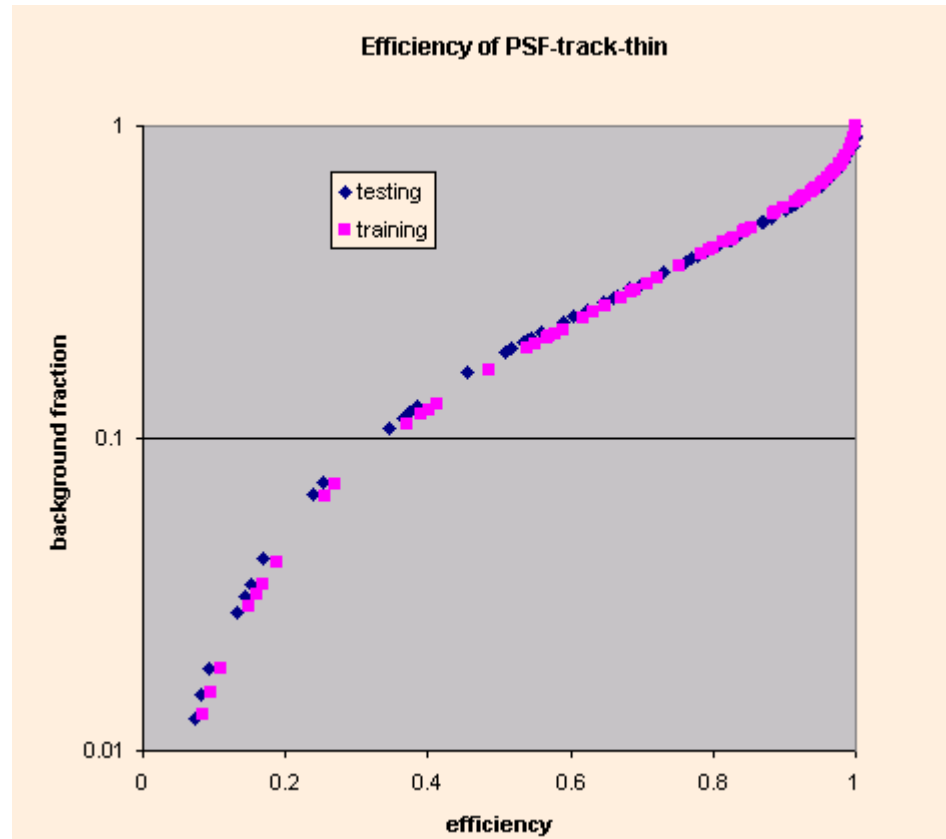
- Each tree is described by two files:
 - *dtree.txt* – ascii file with a list of weighted trees and nodes:
 - tree: specify the weight to assign to the tree
 - branch: variable index, cut value
 - leaf: purity
 - *variables.txt* – list of the corresponding tuple variables
- Evaluation is by passing a vector of floats, ordered according to the variable list.
- Proposal to incorporate the prefilter cut in the tree description

file structure

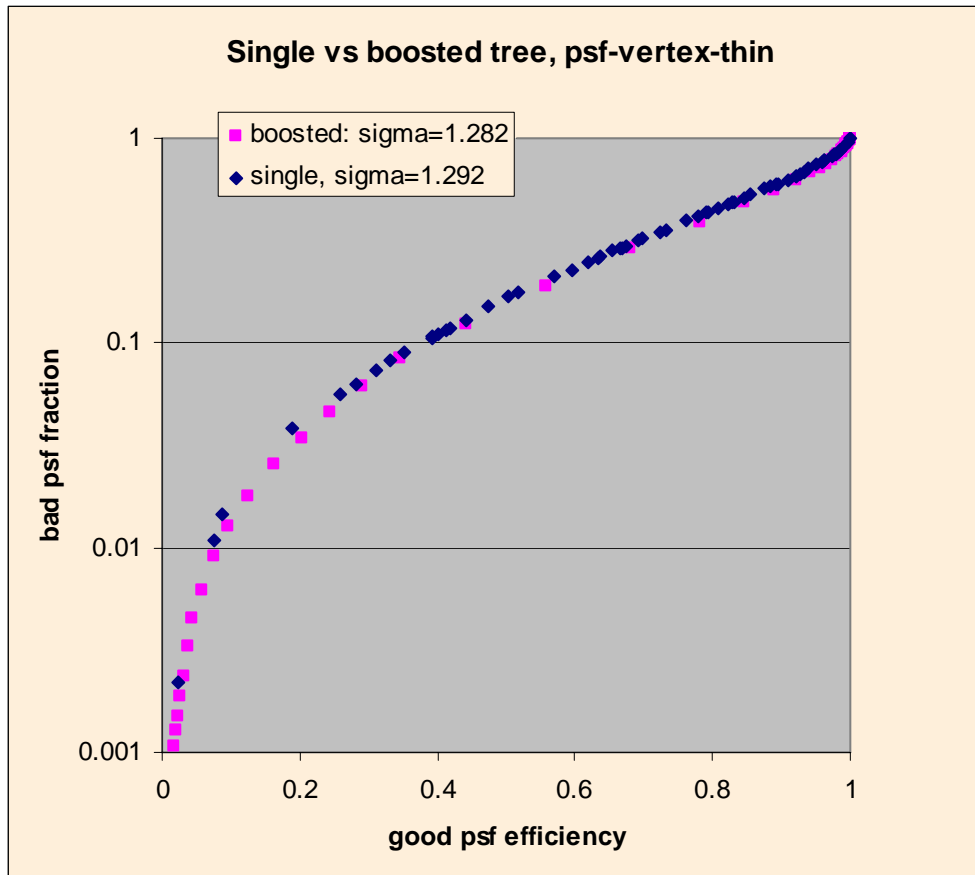


Training details

- Weight signal and background to be the same
- Train on the EVEN events, with optional boosting
- Test with ODD events
- Save training and testing efficiency curves

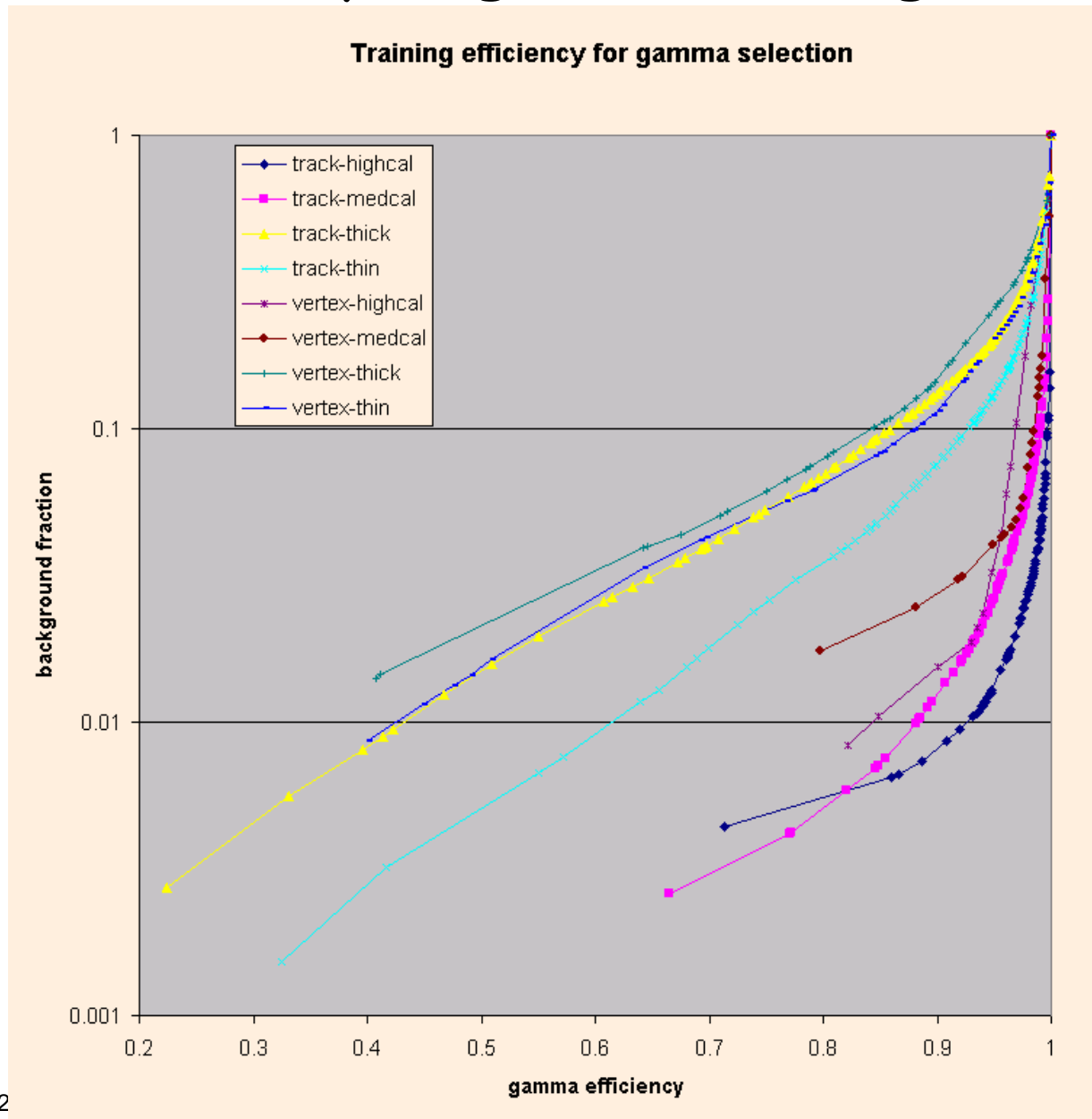


Boosting: what does it do?

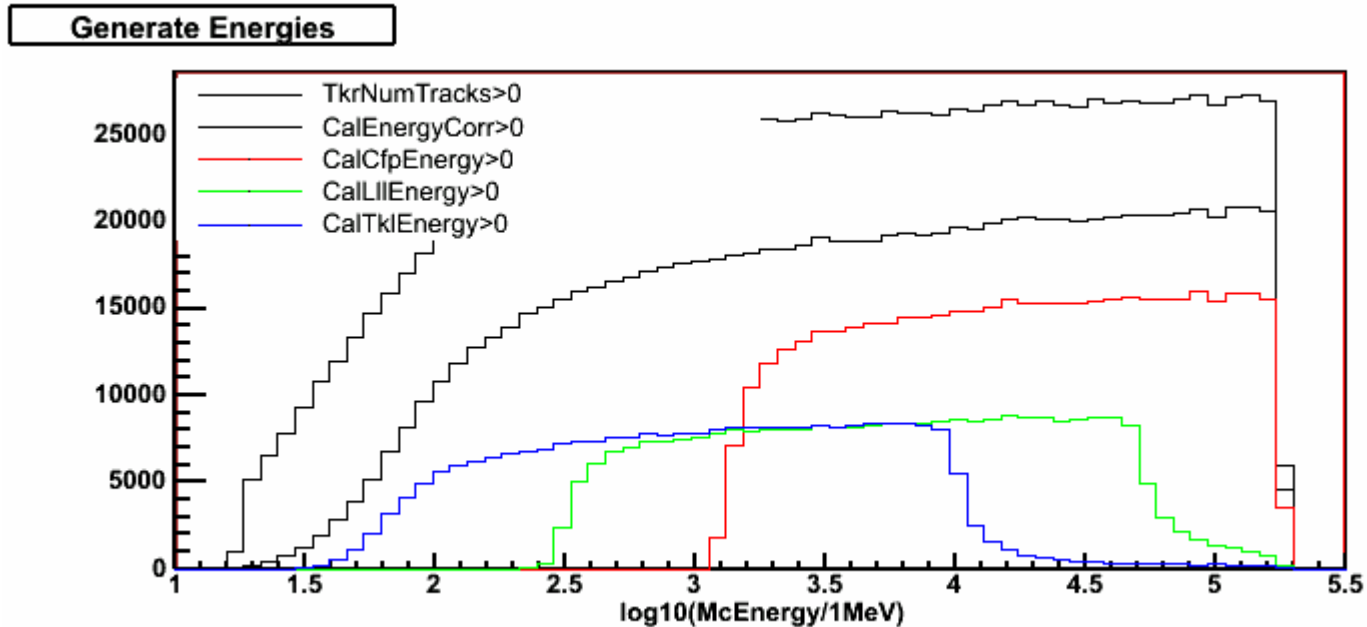


- Nice interpolation for low background
- Not much improvement in actual separation (so far)

Preliminary single-tree background



What about the energy resolution? Validity fractions



The fraction of time each estimate is best

Generate Energies

