



HIGGS SELF-COUPPLING ANALYSIS WITH $H \rightarrow WW^*$

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1

STATUS

○ Constructing kinematic fitter

- $ZHH \rightarrow (bb)(bb)(WW^*) \rightarrow (bb)(bb)(l \nu jj)$
- Try to compare the result between signal and ZZH
- Need to use likelihood ratio?

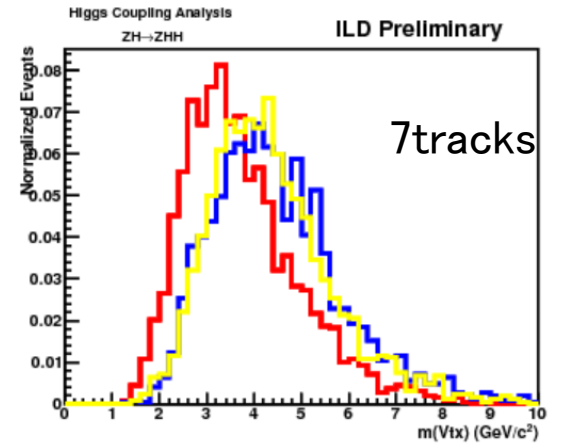
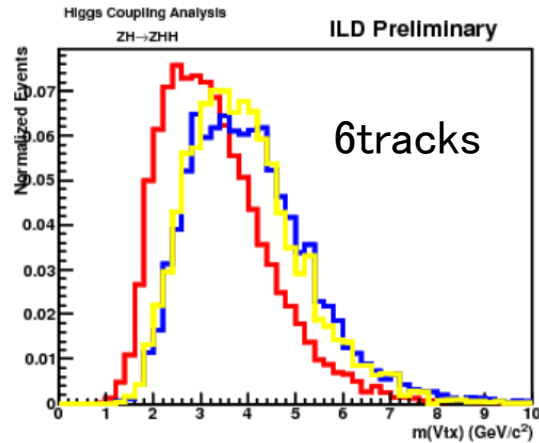
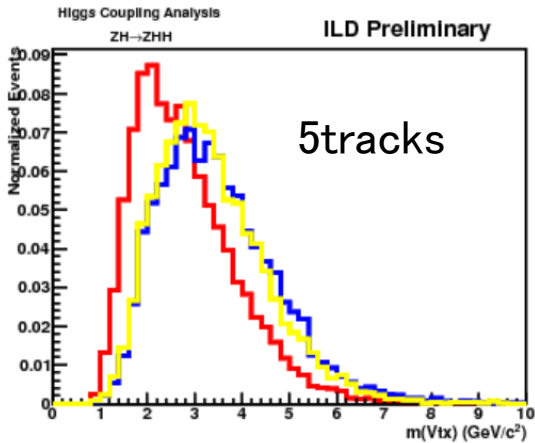
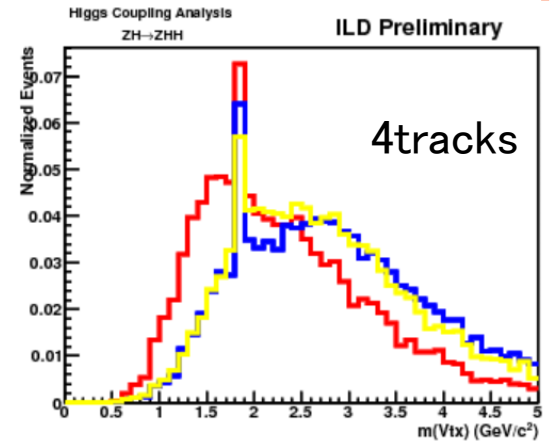
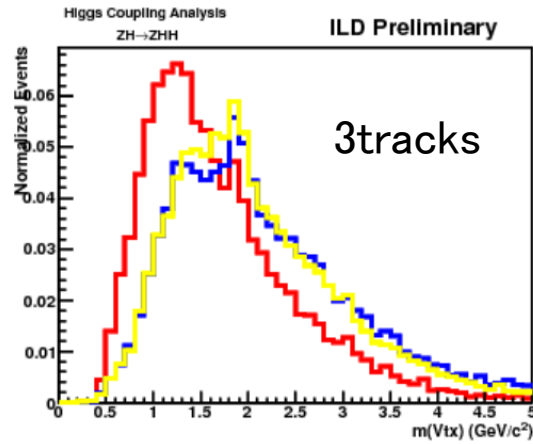
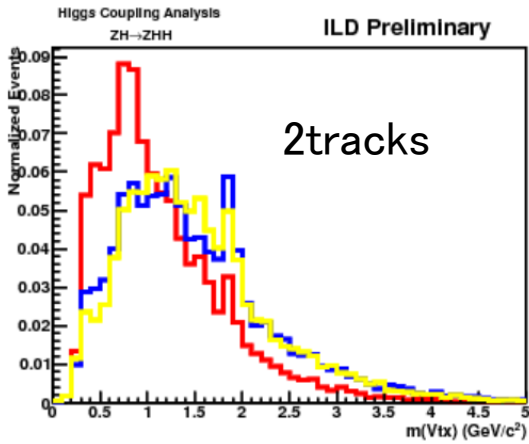
○ Study in LCFIPlus

- Optimize various parameters for all the vertex patterns (1vtx, 2vtx)
- Optimization almost done.
- Start to check using b jets from bbcssc sample
- Start to study 0 vertex case
 - Introduce CDF style “BNess” tagger \rightarrow ongoing

○ Vertex charge study

- Check for 1vtx & 2vtx case
- Playing LCFIPlus changing some parameters and see what happens...
- Pending...

1VTX- SECONDARY VERTICES

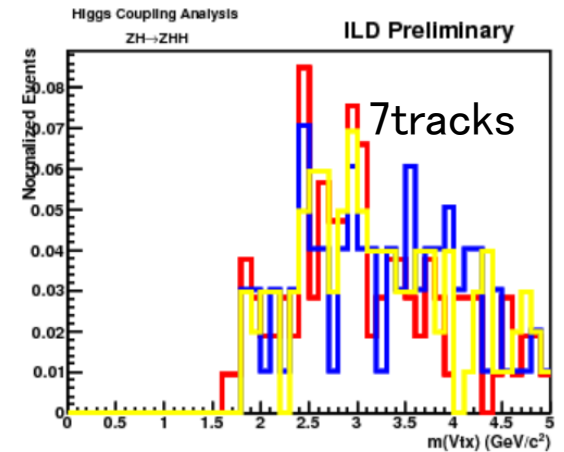
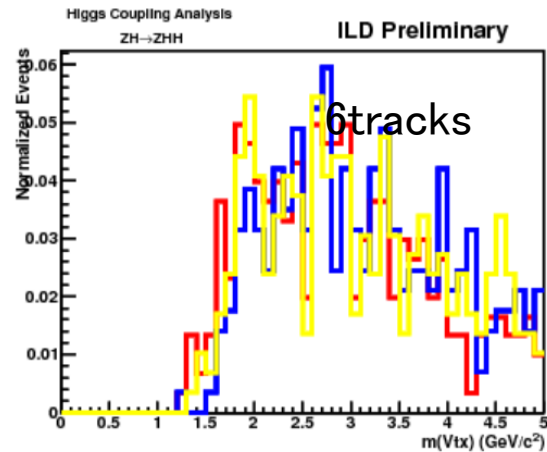
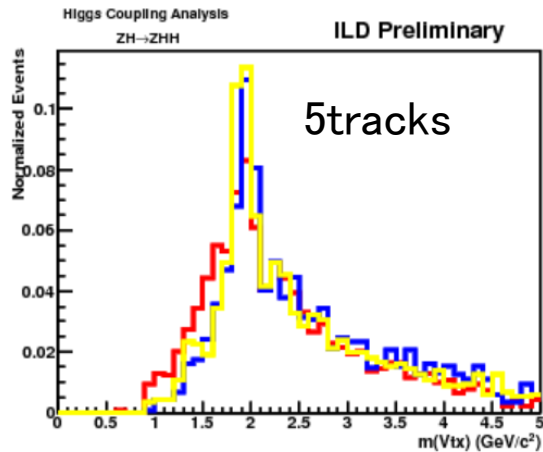
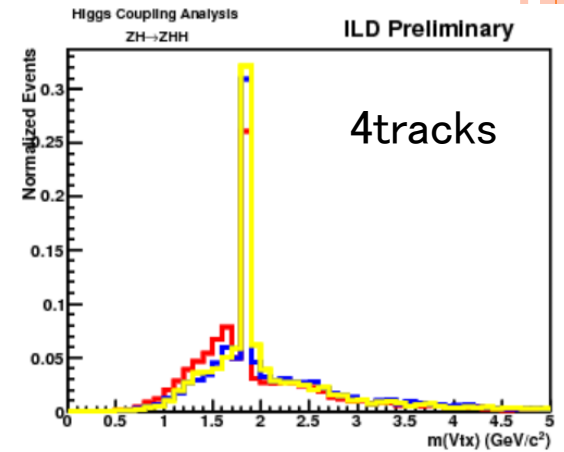
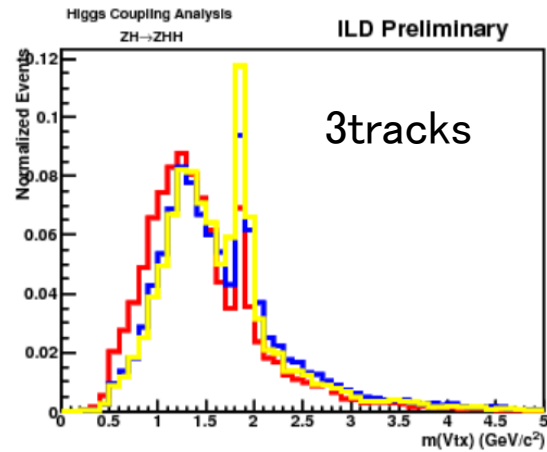
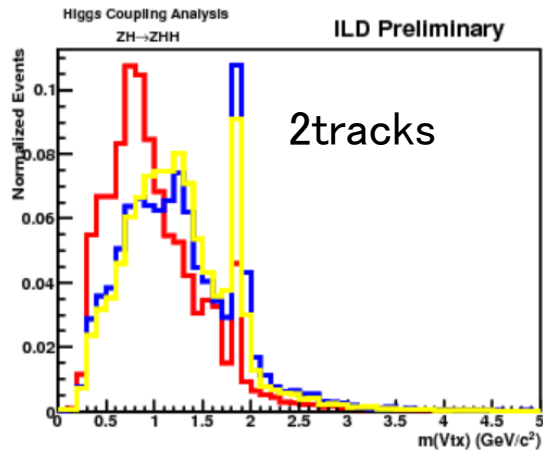


Reco

Pi0&attach perfect

Pi0reco&vertex finder

2VTX- THIRD VERTICES

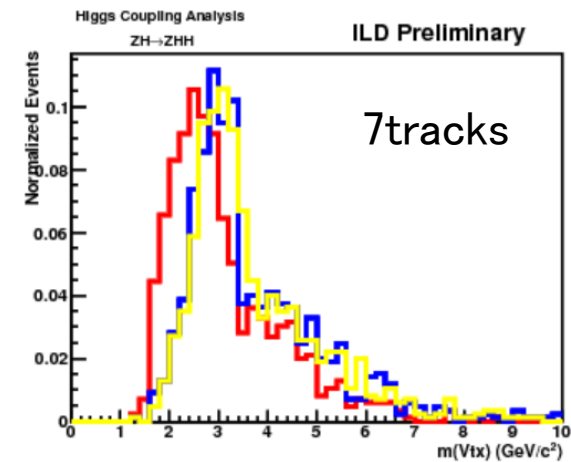
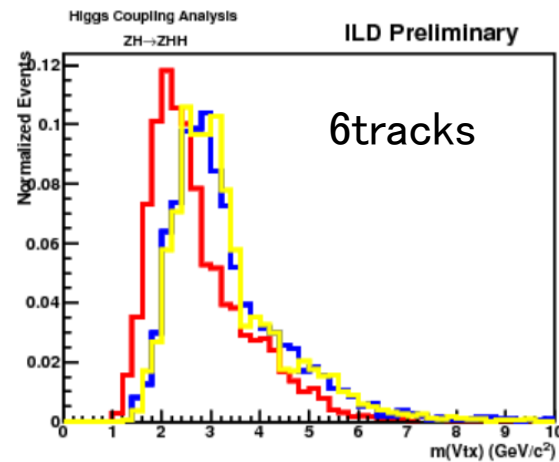
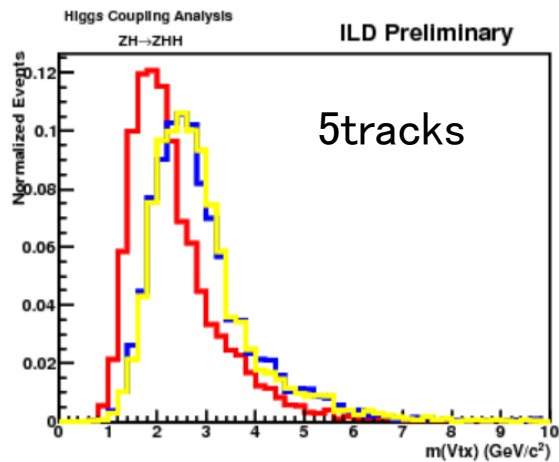
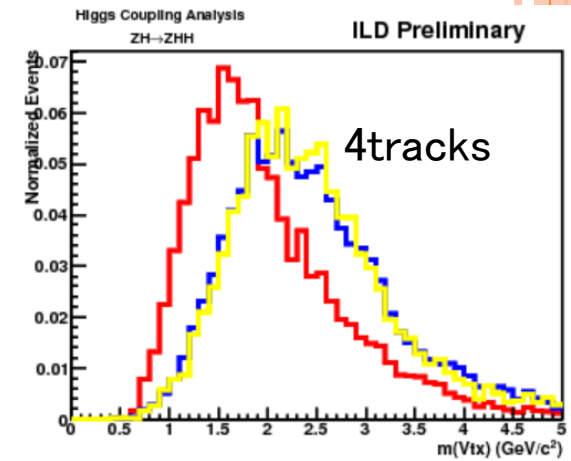
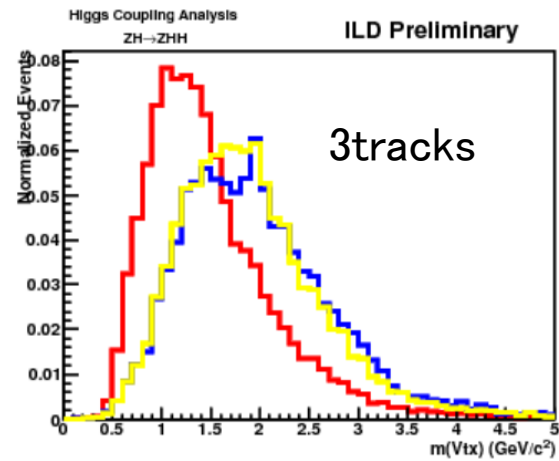
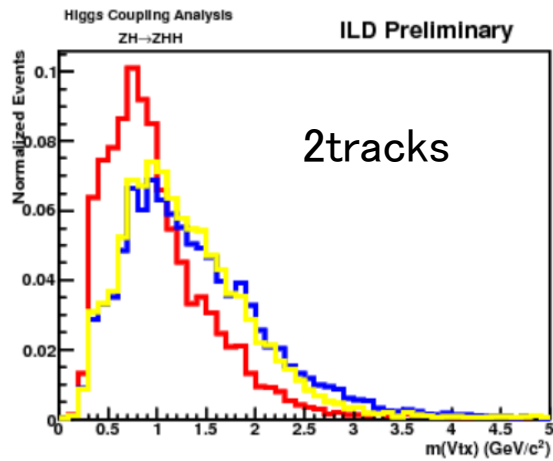


Reco

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2VTX- SECONDARY VERTICES



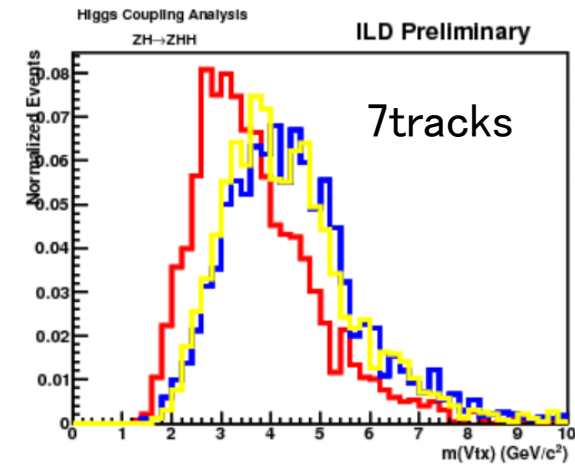
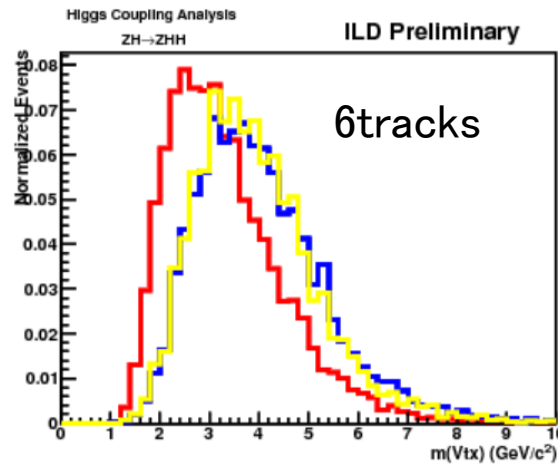
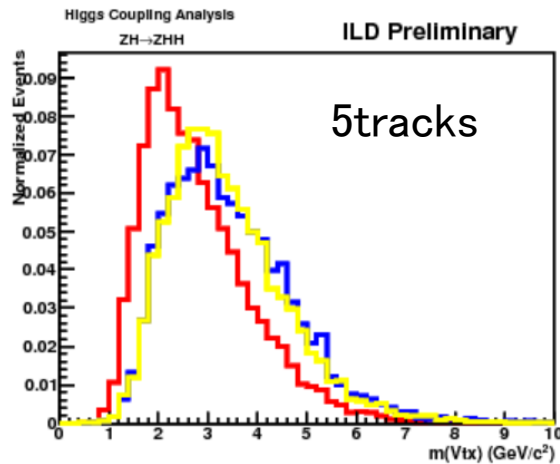
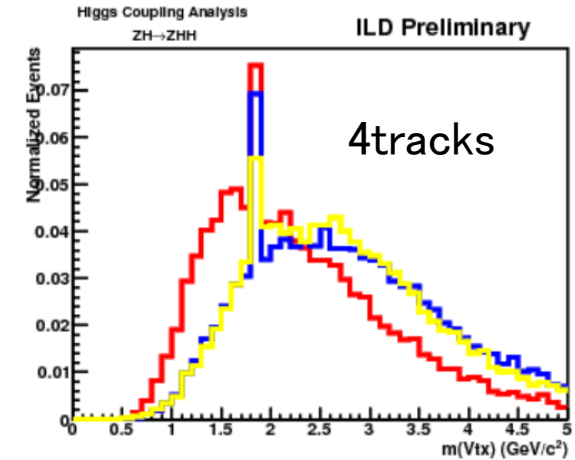
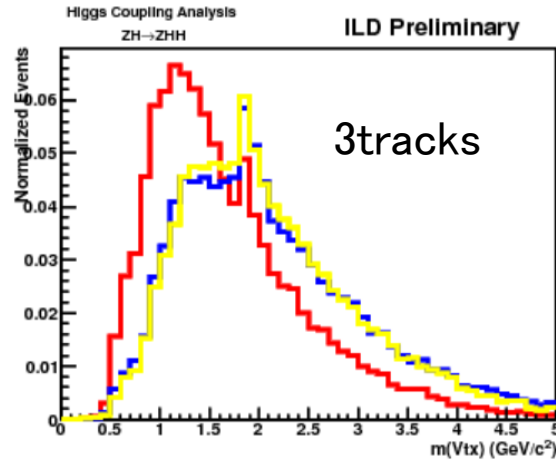
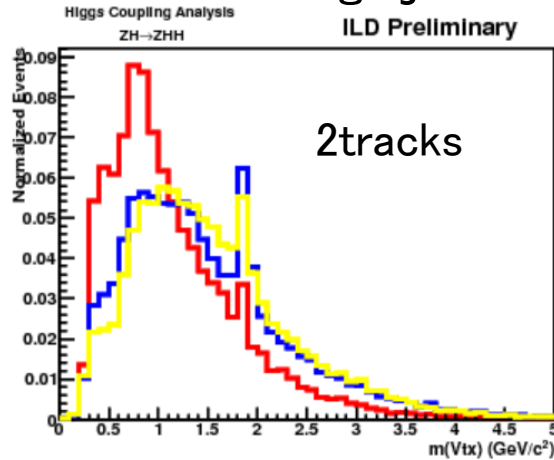
Reco

Pi0attach perfect

Pi0reco&vertex finder

1VTX- SECONDARY VERTICES FROM TOP & Z BOSON

- Use Pi0VertexFinder to b jets from bbcssc sample
 - Using bjets



Reco

Pi0attach perfect

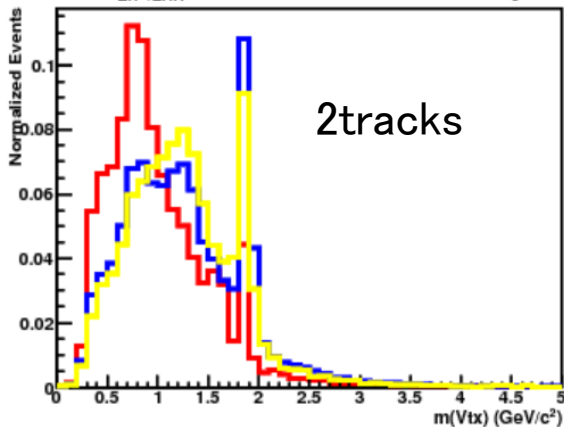
Pi0reco&vertex finder

2VTX- THIRD VERTICES FROM TOP & Z BOSON

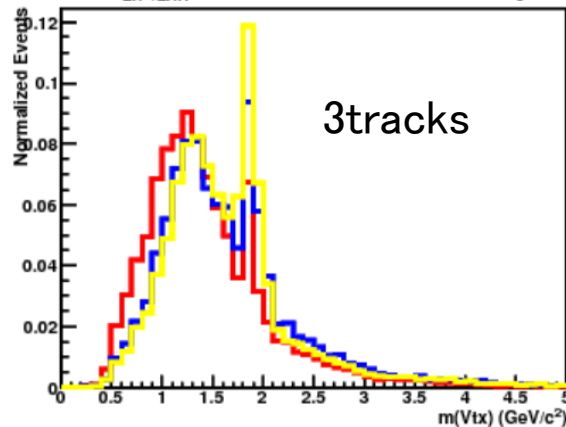
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Using bjets

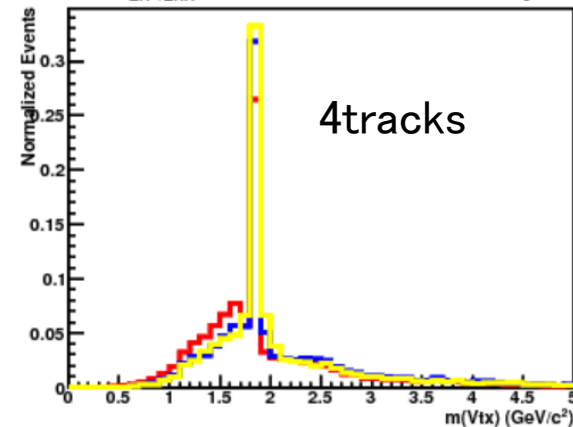
Higgs Coupling Analysis
ZH→ZHH
ILD Preliminary



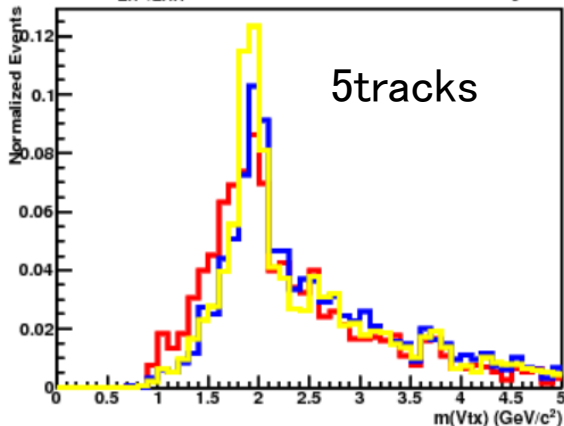
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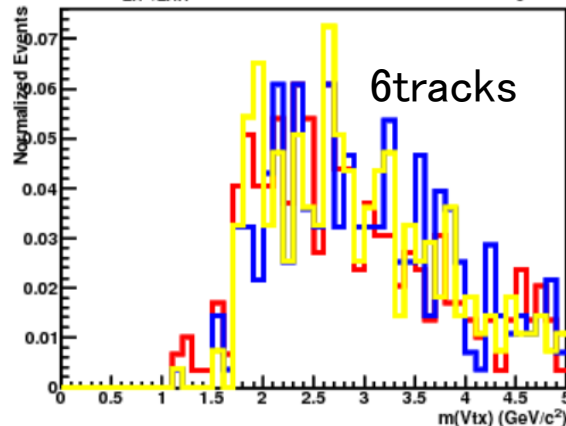
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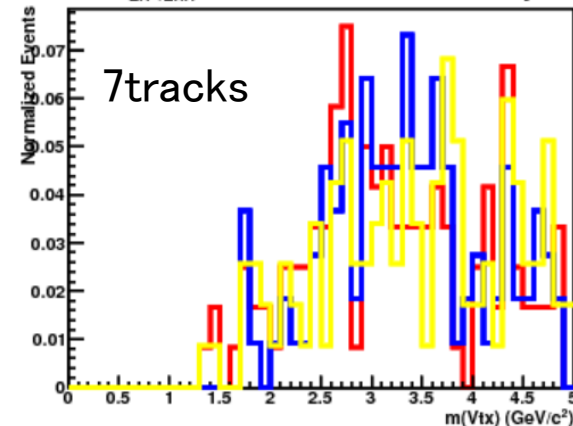
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Reco

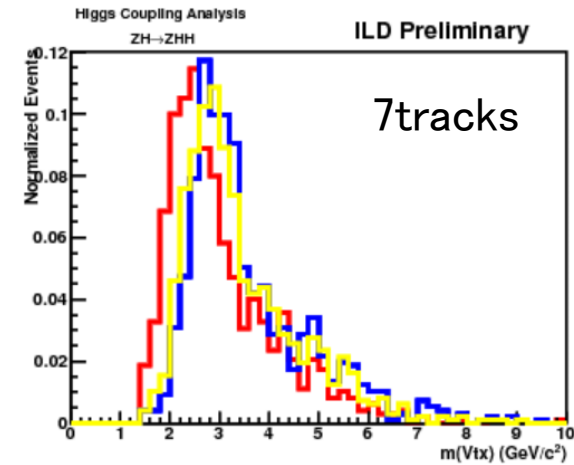
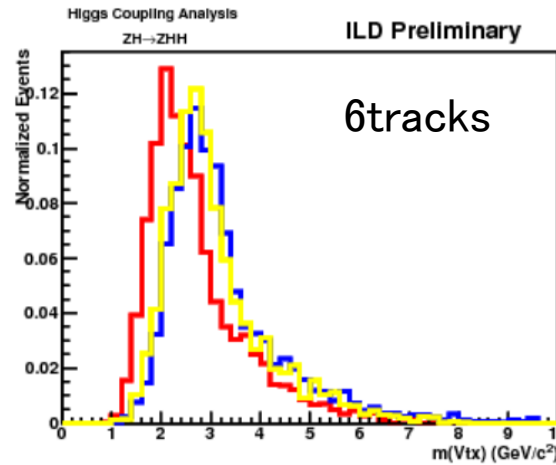
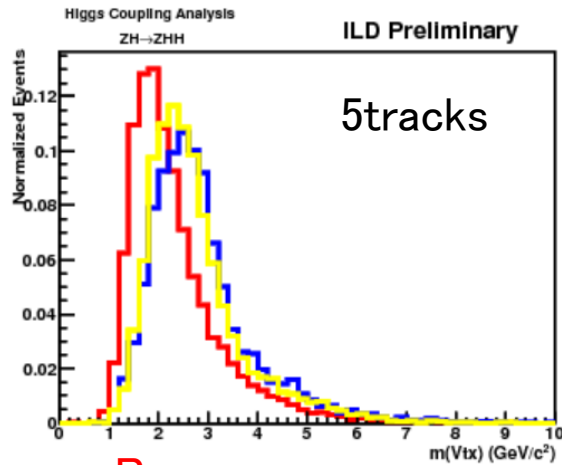
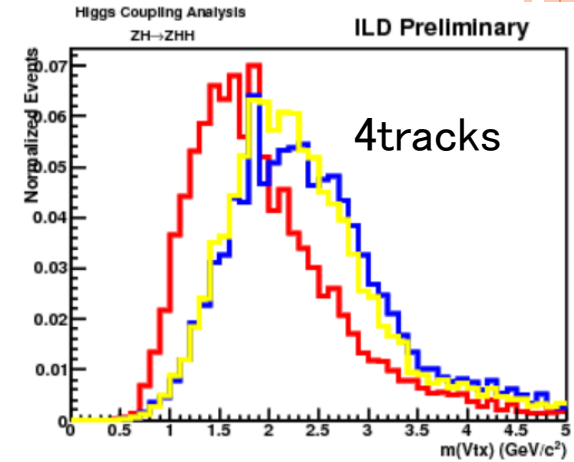
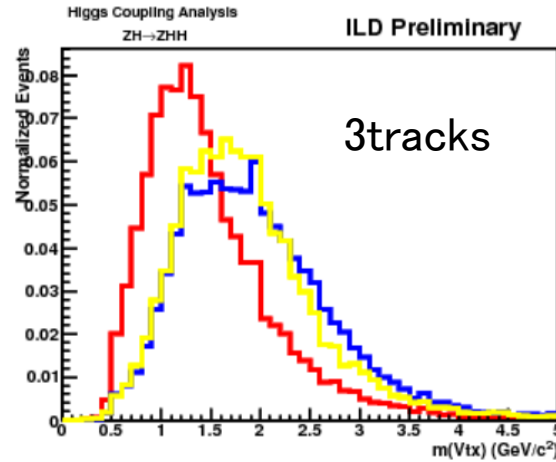
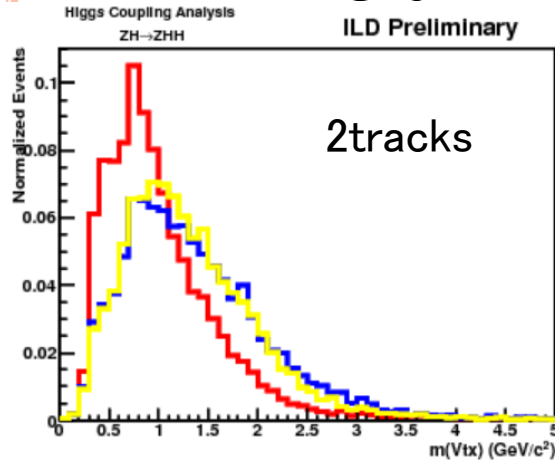
Pi0attach perfect

Pi0reco&vertex finder

2VTX- SECONDARY VERTICES FROM TOP & Z BOSON

- Use Pi0VertexFinder to b jets from bbcssc sample

- Using bjets



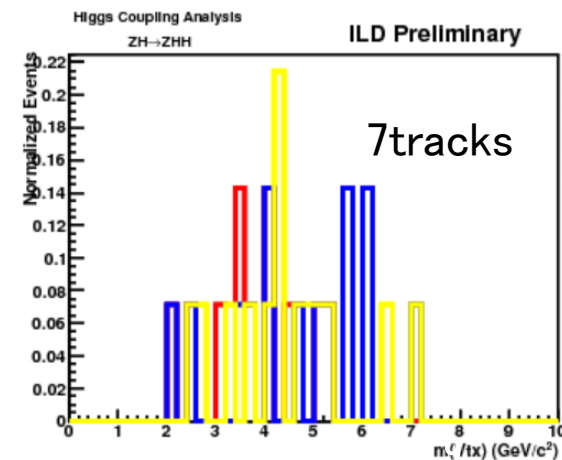
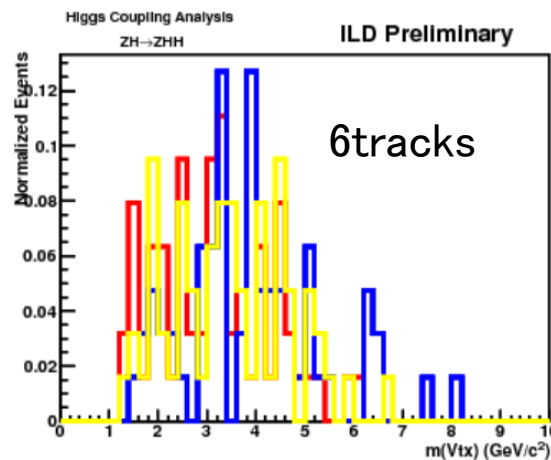
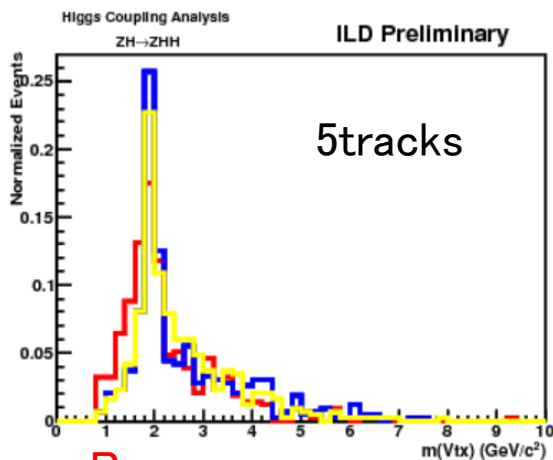
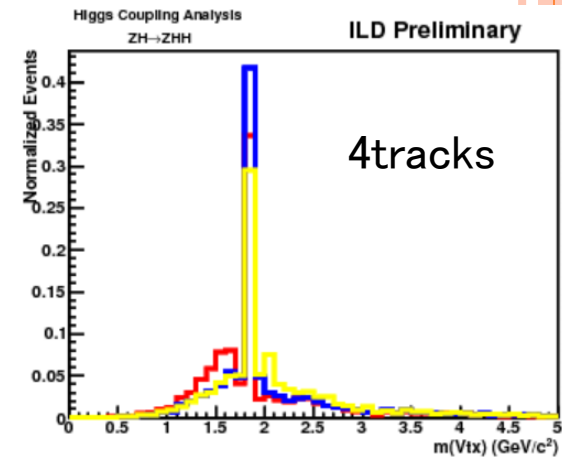
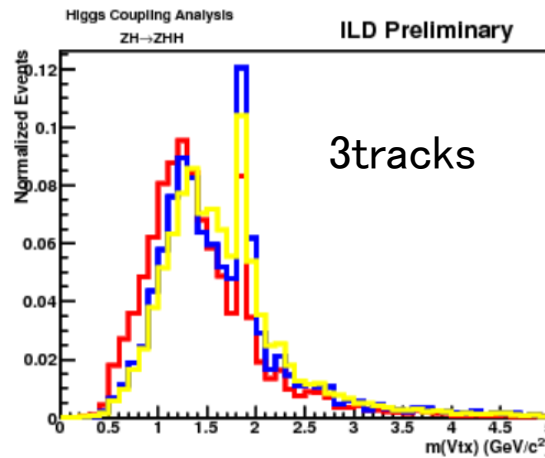
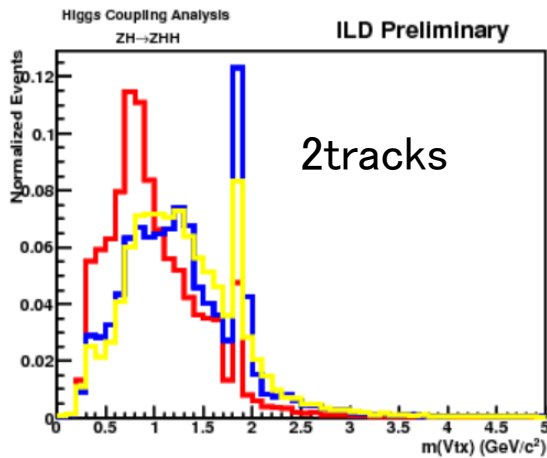
Reco

Pi0&attach perfect

Pi0reco&vertex finder

1VTX- SECONDARY VERTICES OF C JETS

- Use Pi0VertexFinder to cjets
 - Seems to attaching too many pi0s... difficult to keep same performance to bjets and cjets at the same time



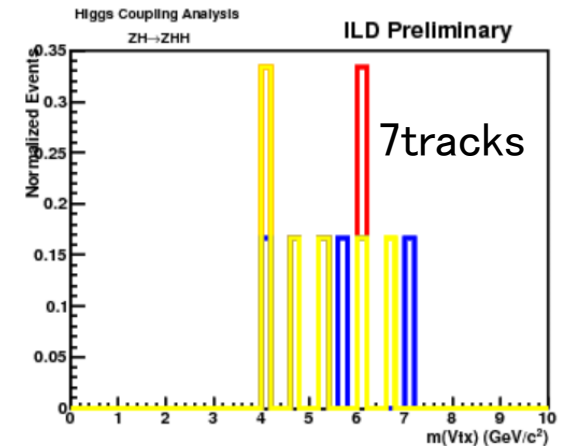
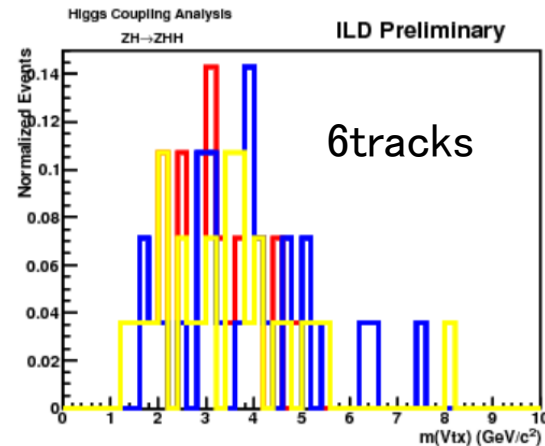
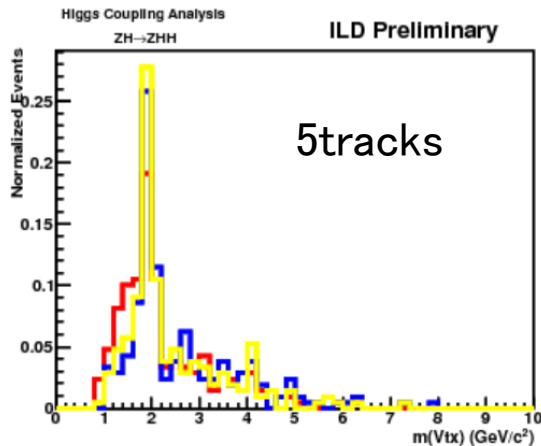
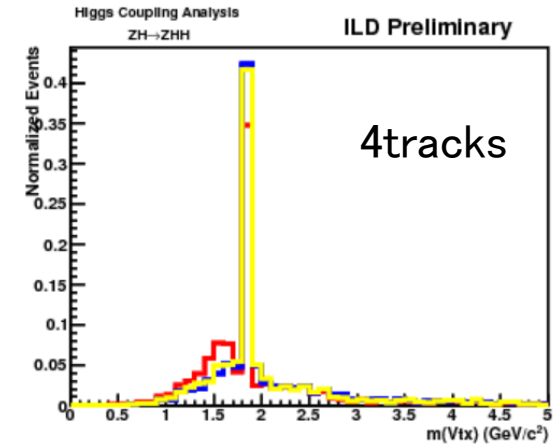
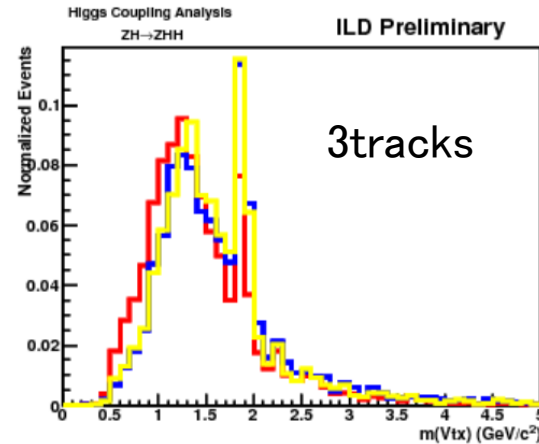
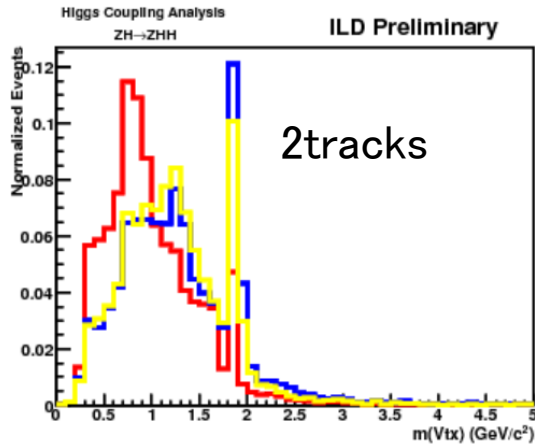
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TRIAL

- If using MVA for third vertex to 1 vtx c jets



Reco

Pi0&attach perfect

Pi0reco&vertex finder