Higgs self-coupling analysis with H→WW*

Masakazu Kurata

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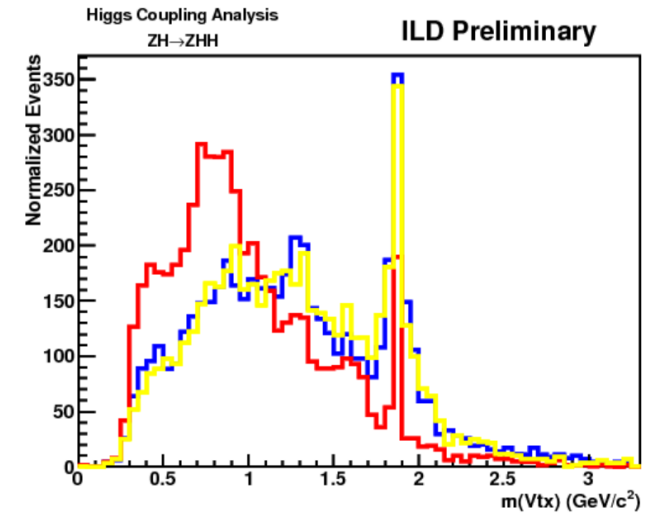
Status

- For flavor tagging improvement
  - Try pi0 attaching in most realistic situation
  - Compare bjet/ljet case
  - I'd like to move to flavor tagger training – by LCWS14!
  - Try to catch a hint in 0vtx case

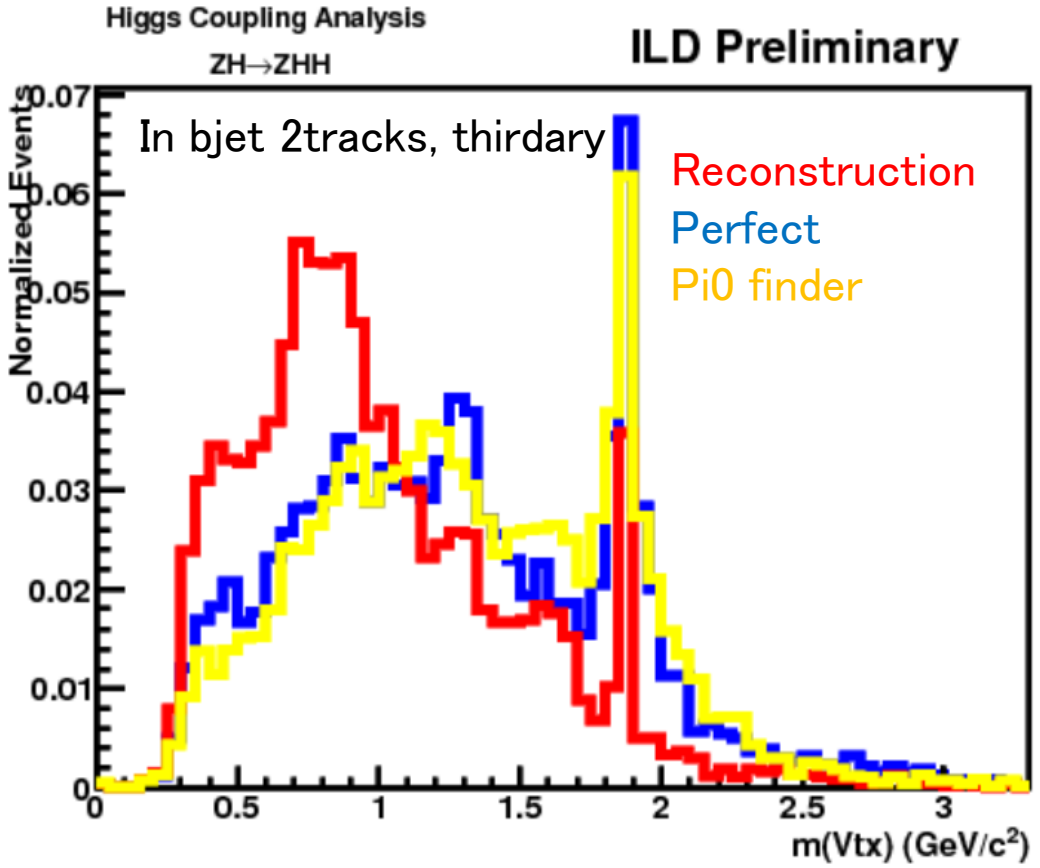
- Start to construct kinematic fitter
  - Inspired by Junping's talk
  - Estimate energy resolution – especially energy dependence
  - Need to estimate angle resolution??
  - ZHH→(bb)(bb)(WW*)→(bb)(bb)(l ν jj)
  - Just start the study

VTXMASS RECOVERY(I WANTED TO TALK MORE@ILD MEETING!)

- Can the vertex mass be recovered?
  - Possibility of attaching pi0s which escape from vertices
  - Particle type on vertices is of course the key point! → particle ID
  - D meson mass peak will be a landmark for the study
  - Looking for gammas from neutral particles → gamma finder
  - Constructing pi0s from 2 gammas → pi0 finder
  - Looking for pi0 candidates

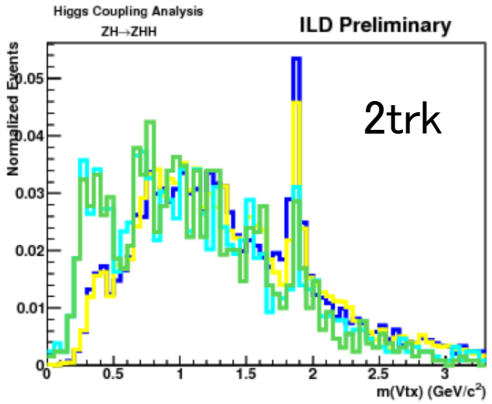


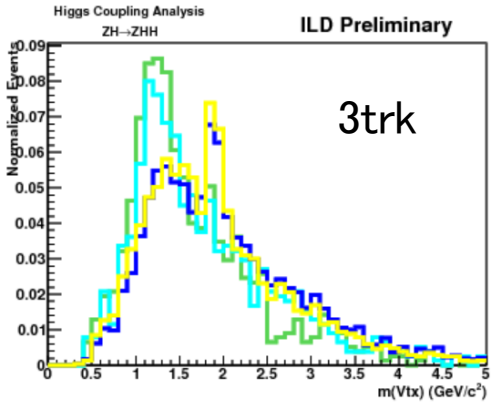
  - Study on going
  - How is the effect on flavor tagging?

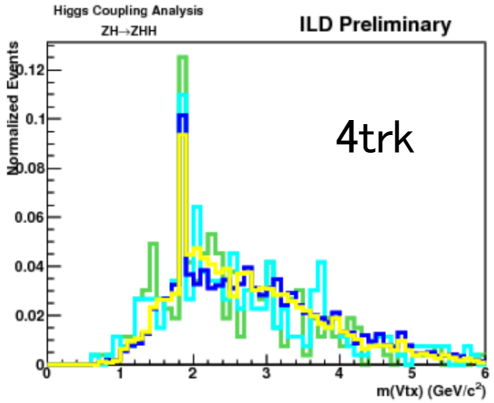


Comparison between bjet/ljet

- Using classifier trained with bjet vertices – 1vtx case
  - ljet mass recovery is very reasonable too
  - Why can D meson peak be seen in ljet?
    - Gluon splitting or hadronization?
    - I tried to avoid c quark effect → but can't suppress it!
    - Under investigation
- I don't know how much does it affect on flavor tagging so far







bjet perfect
bjet Pi0 finder
ljet perfect
ljet Pi0 finder

TODO

- Continue to check vtxmass recovery
  - So far, looks ok, but need to precise check
- Its time to apply it to flavor tagging!
- Checking vertex charge on vertex with each particle type
- Construct the kinematic fitter
  - Try to apply it to signal events
  - Comparison with backgrounds, especially ttbar+X & ZZH
- Target is LCWS14