



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

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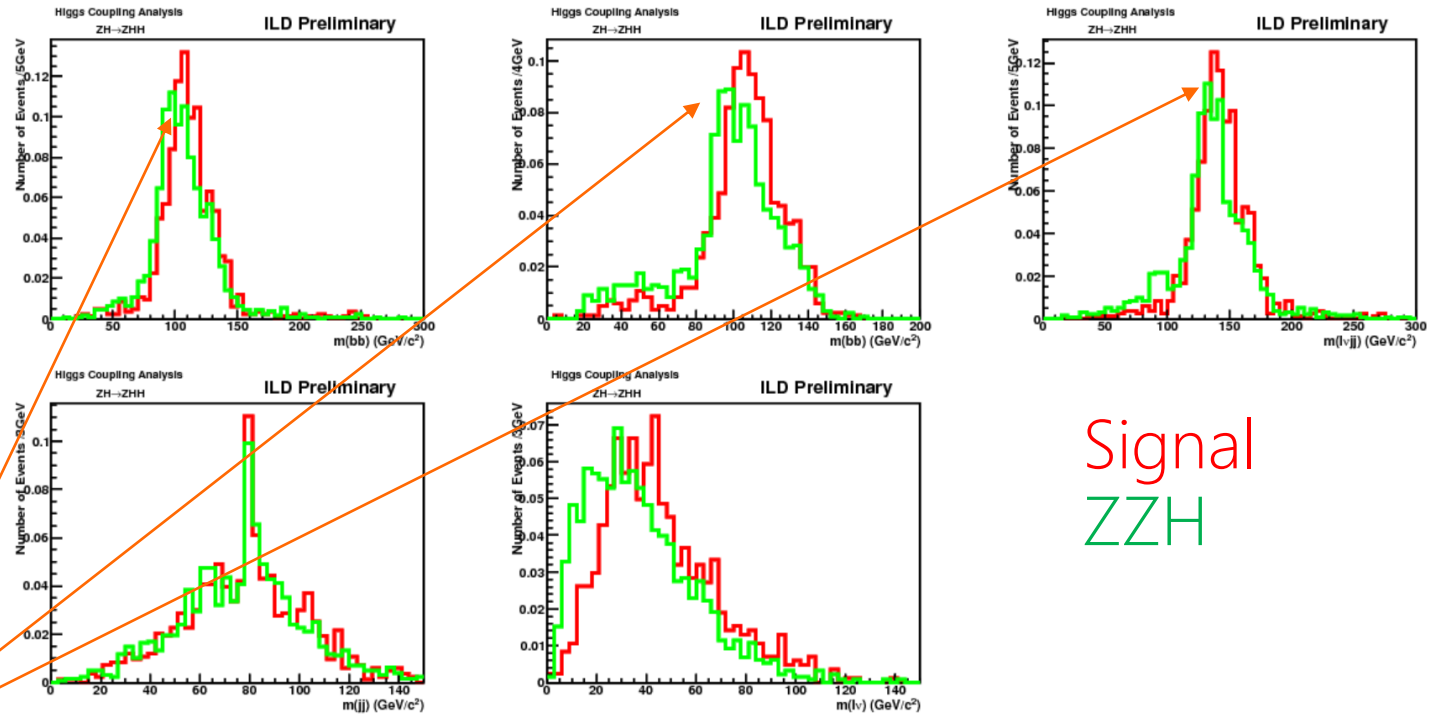
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STATUS

- Restart kinematic fitter
 - Check all hadronic ZZH case
 - Start to construct 1TeV case – use to reject ttbar events
 - Vector Boson Fusion process sensitivity should be improved
- Vertex charge study
 - Ongoing... no results can be shown yet
 - Trying some ideas for vertex finding eff. & vertex charge assignment eff. improvement
 - So far, vertex charge assignment eff. improves up to 4%... – not significant improvement... of course need more
 - More precise study of each track on vertex is necessary

ZZH KINEMATIC FITTER FOR ALL HADRONIC

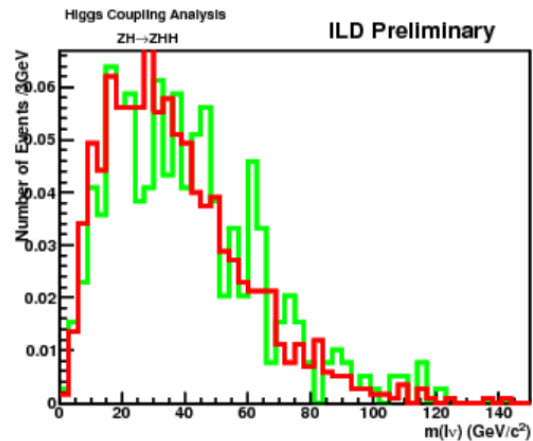
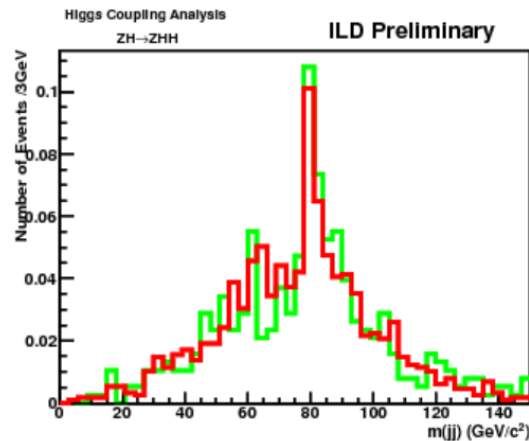
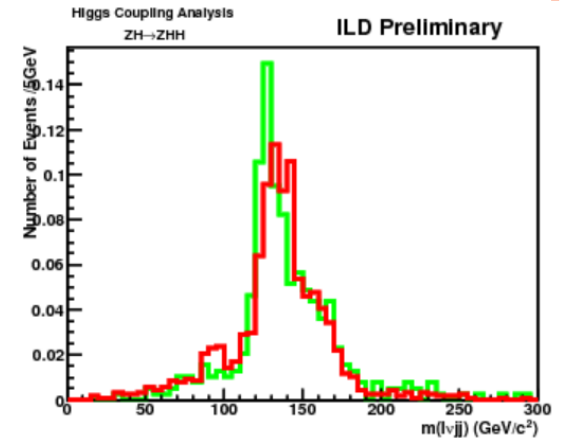
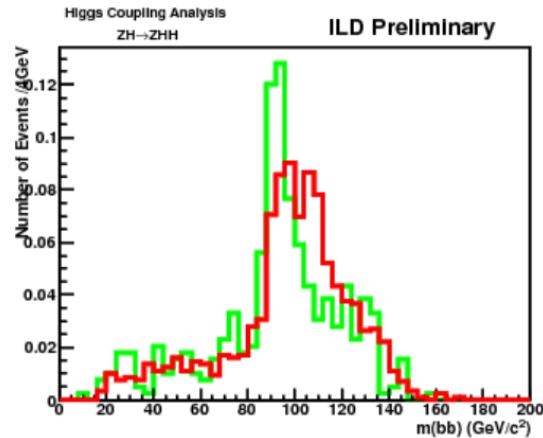
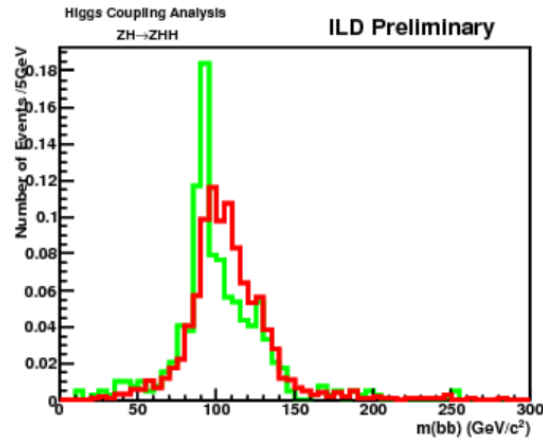
- Process of $ZZH \rightarrow (bb)(bb)(WW) \rightarrow (bb)(bb)(jjjj)$
- Check mass resolution after kinematic fitter



- Why mass peak shifts from Z or Higgs mass?
 - Check the code, but so far no bug found
 - Due to the process of $ZZH \rightarrow (qq)(bb)(bb)$?

MASS DISTRIBUTIONS FOR SIGNAL AND BACKGROUNDS

- ZZH sample is divided into 2 components:
 - $ZZH \rightarrow (XX)(XX)(bb)$ and $ZZH \rightarrow (XX)(XX)(\text{other})$
 - Use all hadronic ZZH kinematic fitter



(XX)(XX)(bb)
(XX)(XX)(other)

- WW decay will be dominant in $H \rightarrow \text{other}$, so mass peak & resolution become better