

ZHH Analysis.

Neutrino channel observables

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Observables in Claude's BDTs

1) against bbbb

- **E_vis**: visible energy
- **ptmiss**: missing pt
- **thrust**
- **pjmax**: largest jet momentum for 6j
- **M(Z1), M(Z2)**: dijet masses (4j) according to ZZ hypothesis

2) against lvbbqq

- **npfos** (look for large multiplicities from b-jets)
- **M_miss**: missing invariant mass i.e. $M(Z)$
- **M(H1), M(H2)**: dijet masses (4j) according to HH hypothesis
- **npfosmin**: number of pfos for jet with least pfos for 5j, representing the tau-jet
- **M(W1), M(W2)**: W1: tau-jet+neutrino, bb from highest b-tags, W2=qq from smallest b-tags
- **M(t1), M(t2)**: (tt) combine one b-jets with hadronic W boson (2 combinations)
- **pcmax**: largest momentum of charged pfos (corresponding to pion from tau-decay)
- **yminus**: whether 4j or 5j hypo fits better

3) against ZZH/ZZZ

- **chi2_ZHH**
- **chi2_ZZH**
- **M(H1), M(H2)** (pre-fit) according to (Z)HH hypo
- **M(H), M(Z)** (pre-fit) according to (Z)ZH hypo
- **M(Z1), M(Z2)** (pre-fit) according to (Z)ZZ hypo
- **p1st and cos1st (ZZH)**: largest boson momentum and its polar angle (to identify t-channel digram)
- **p1st and cos1st (ZZZ)**: largest boson momentum and its polar angle (to identify t-channel digram)



















