Status of Higgs -> ZZ* (semi-leptonic) analysis

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Content

- Analysis status

  -- tagged lepton/jet ‘s variables

  -- Scatter plot

- Brief Summary

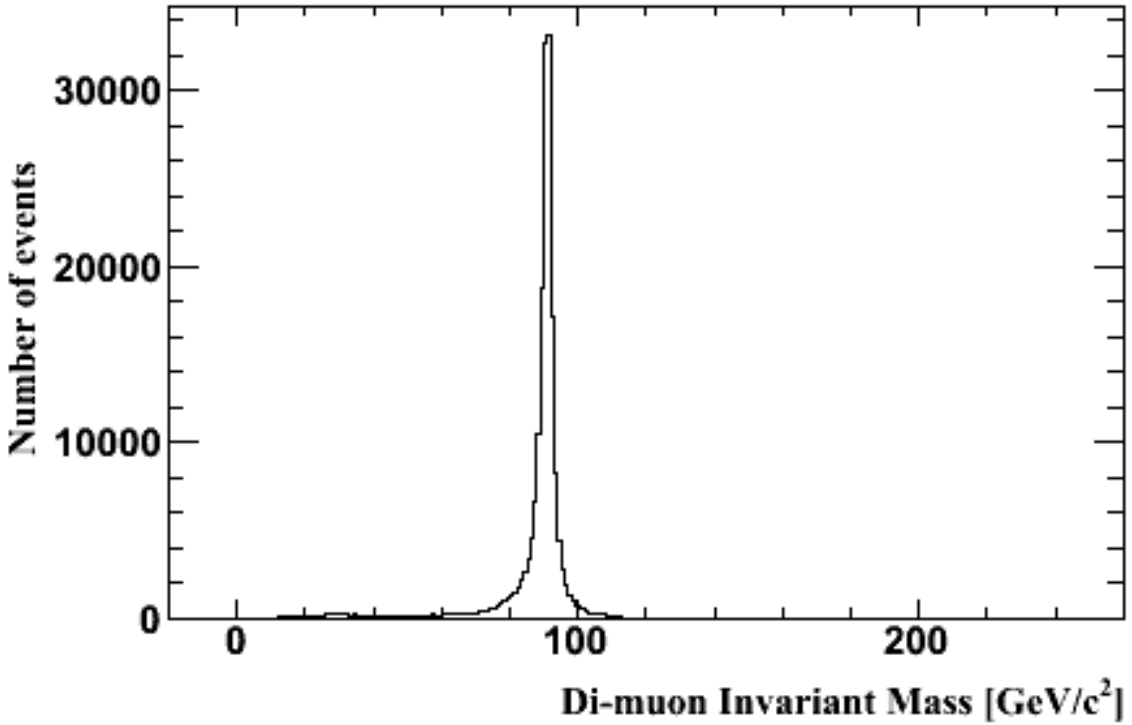
Analysis condition

- CEPC-v4
- Channel : $Z(->\mu^+\mu^-)H(->ZZ^*->qq\nu\nu)$
- Data Samples (signal) :

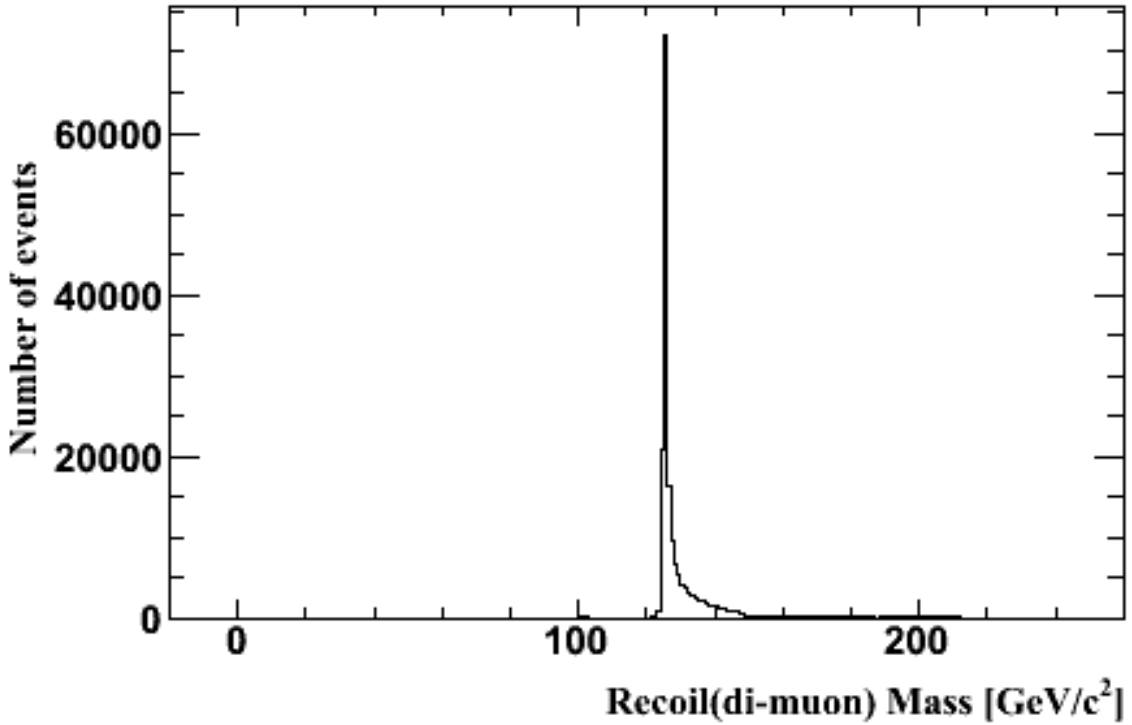
/besfs/groups/higgs/data/SimReco/wo_BS/CEPC_v4/higgs/smart_final_states/E240.Pllh_zz.e0.p0.whizard195/

- Exclusive requirement of 2 isolated muons + jets clustering(n=2)
- No ISR/FSR cut.

Invariant and Recoil mass of two muons

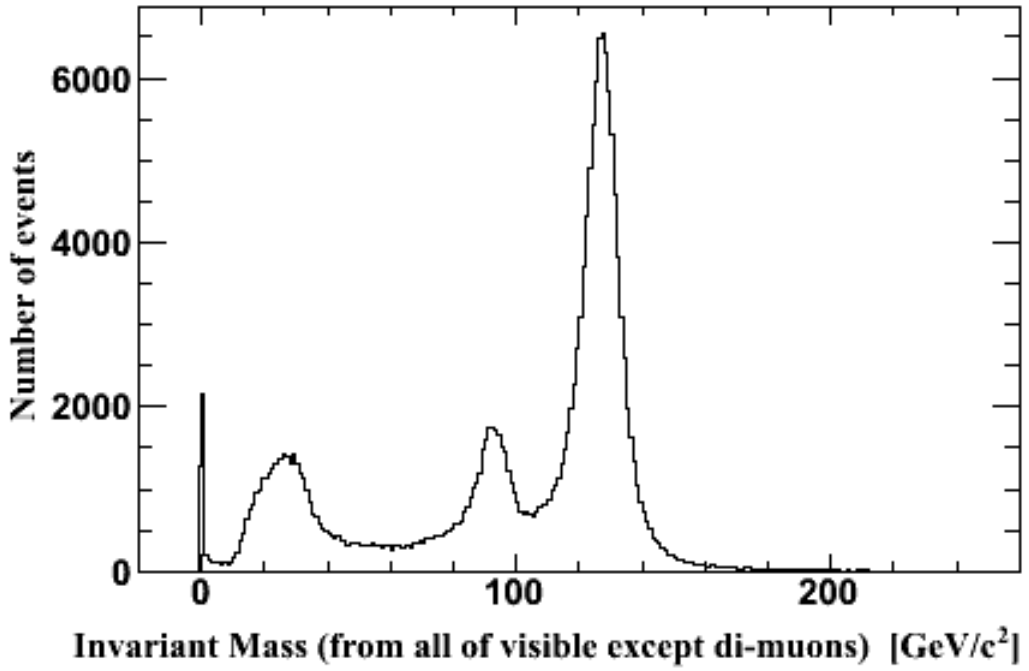


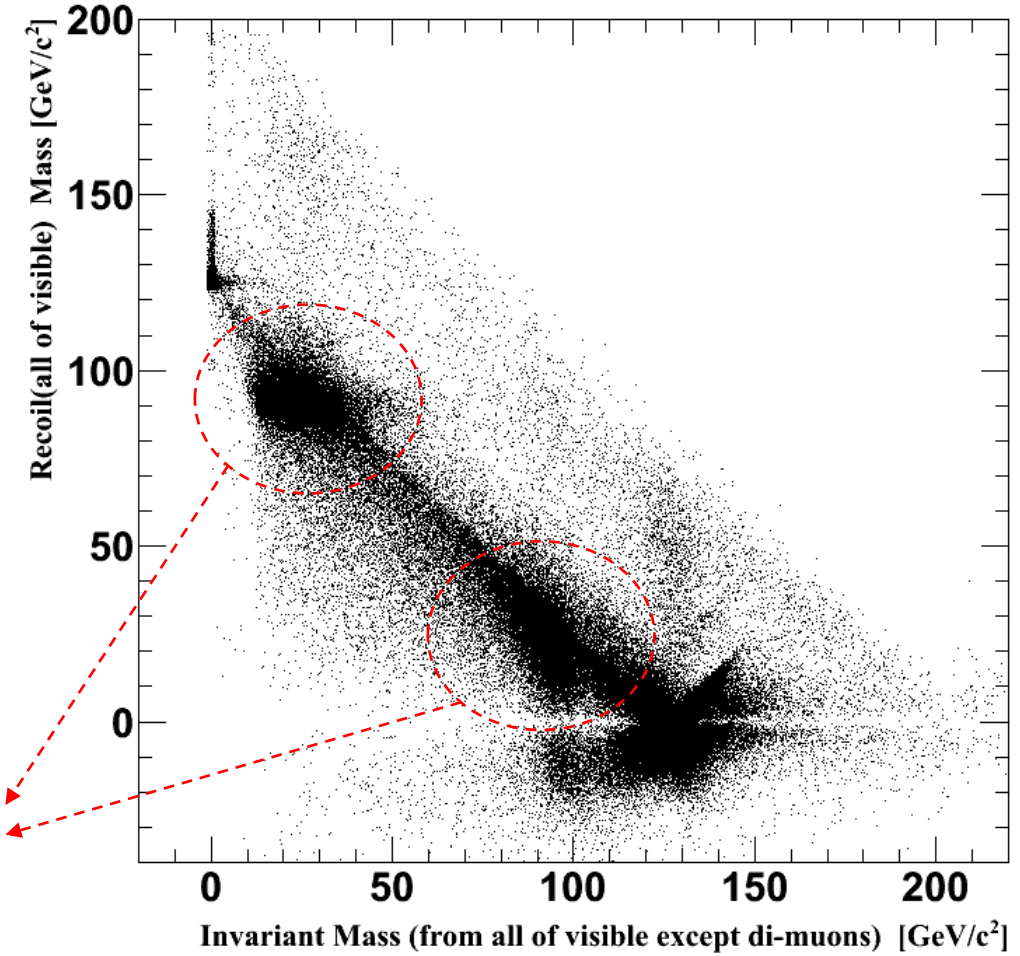
Inv. Mass



Rec. Mass

Invariant mass (of all vis. except muons) and 2D-scatter plot





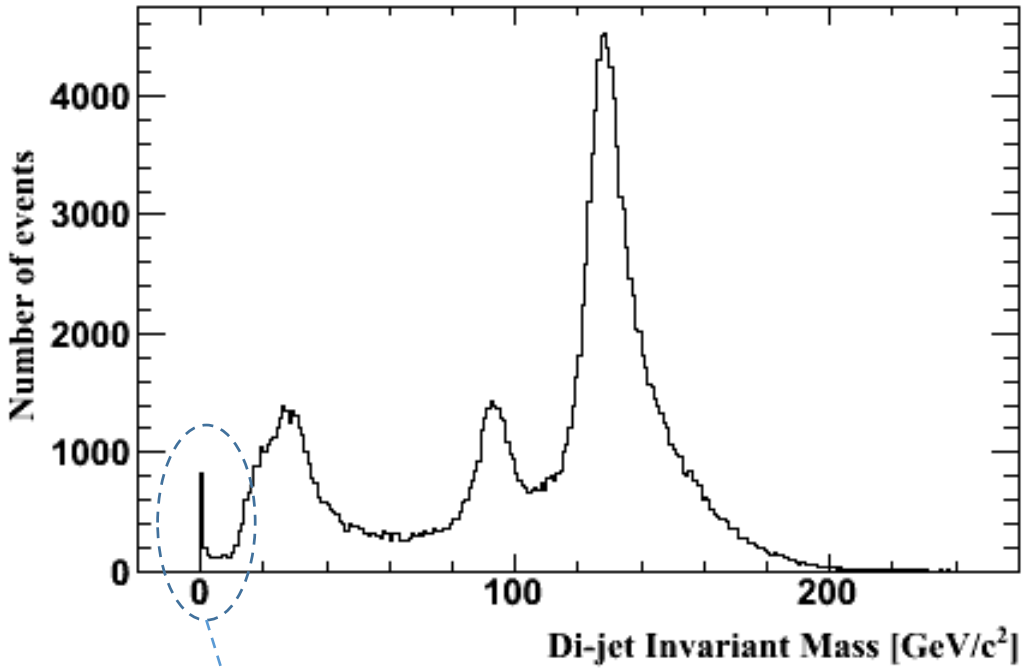
This region (ZZ*) can be somehow separated from the other peaks

suggestion from Manqi/Yongfeng

Jet Reconstruction

-- Using LCFIPlus

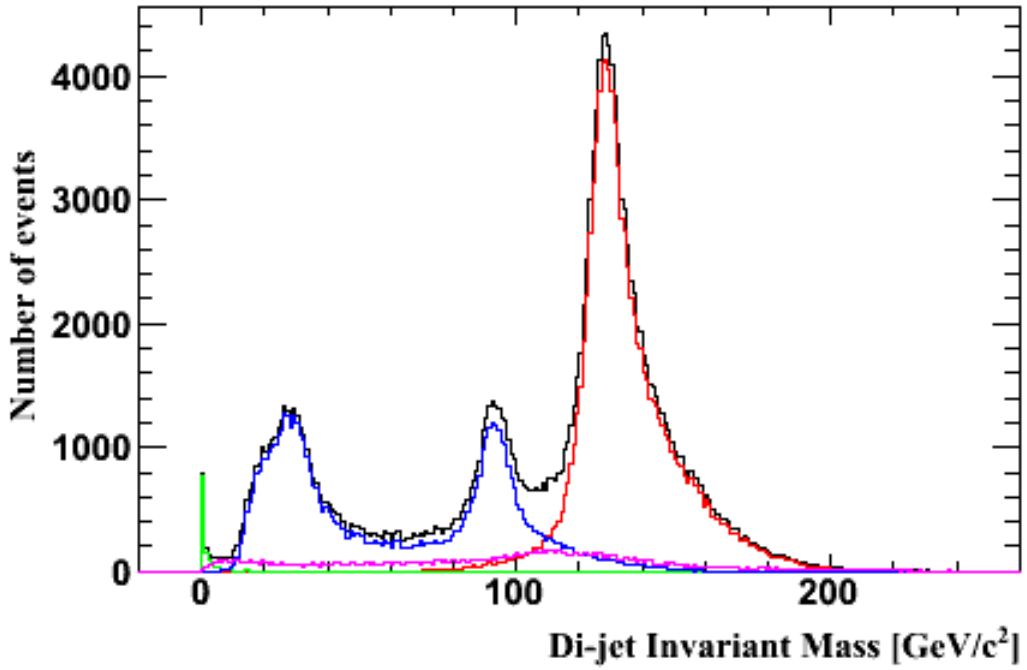
Inv. Mass of two jets



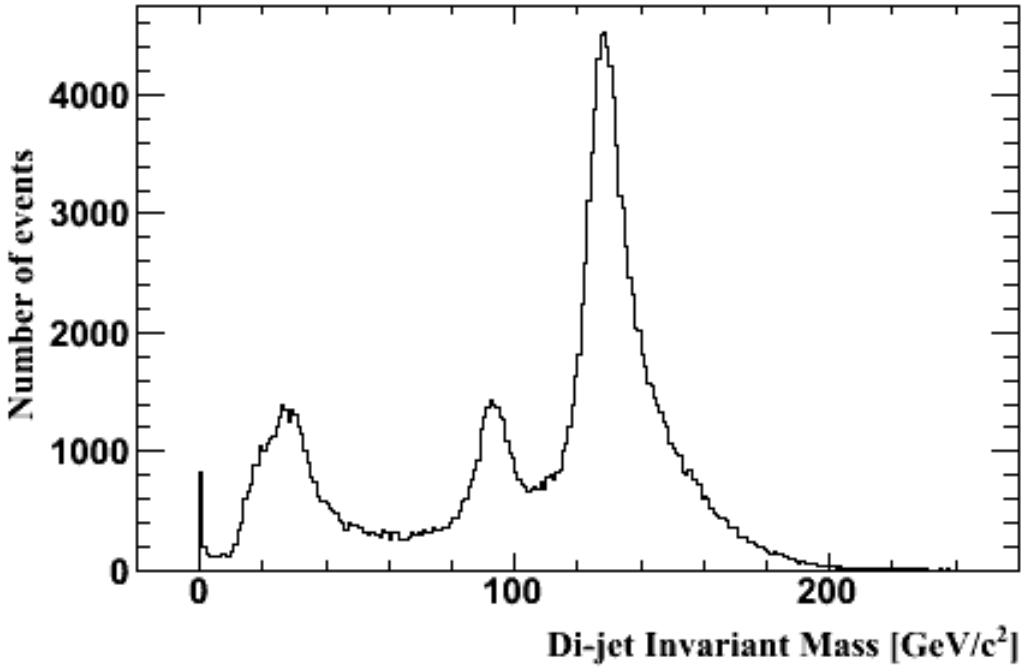
under investigation

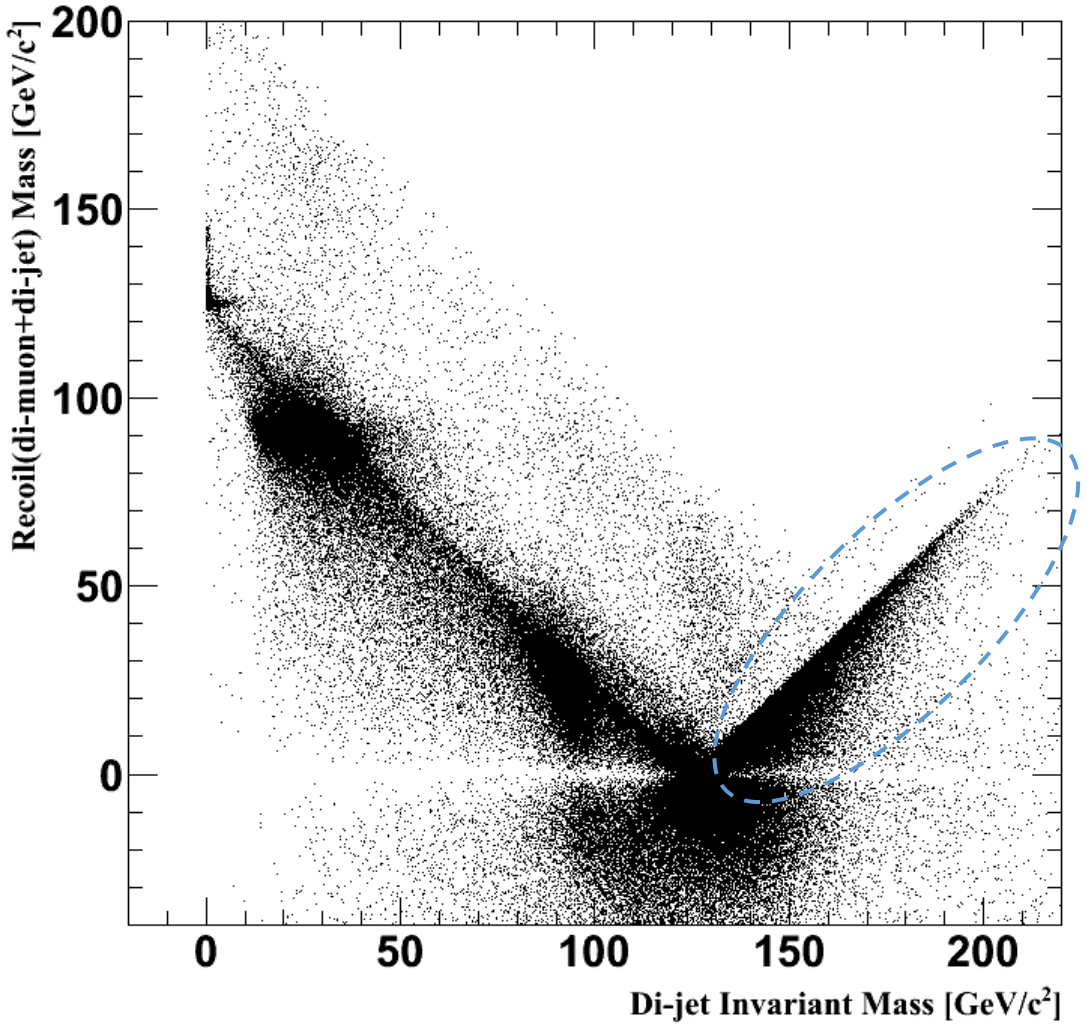
MCTruth Info.

- ZZ* -> qqqq
- ZZ* -> qqνν
- ZZ* -> νννν
- ZZ* -> llXX (l=e,μ,τ)



Invariant mass and 2D-scatter plot





Summary of current status

- Have a looked the signal sample
- Specific cuts are not applied yet.
- y distances, flavor ? ,,,
- Would like to run the background samples
- If there are any specific routes/goals etc.,
  highly appreciate your suggestions/helps.