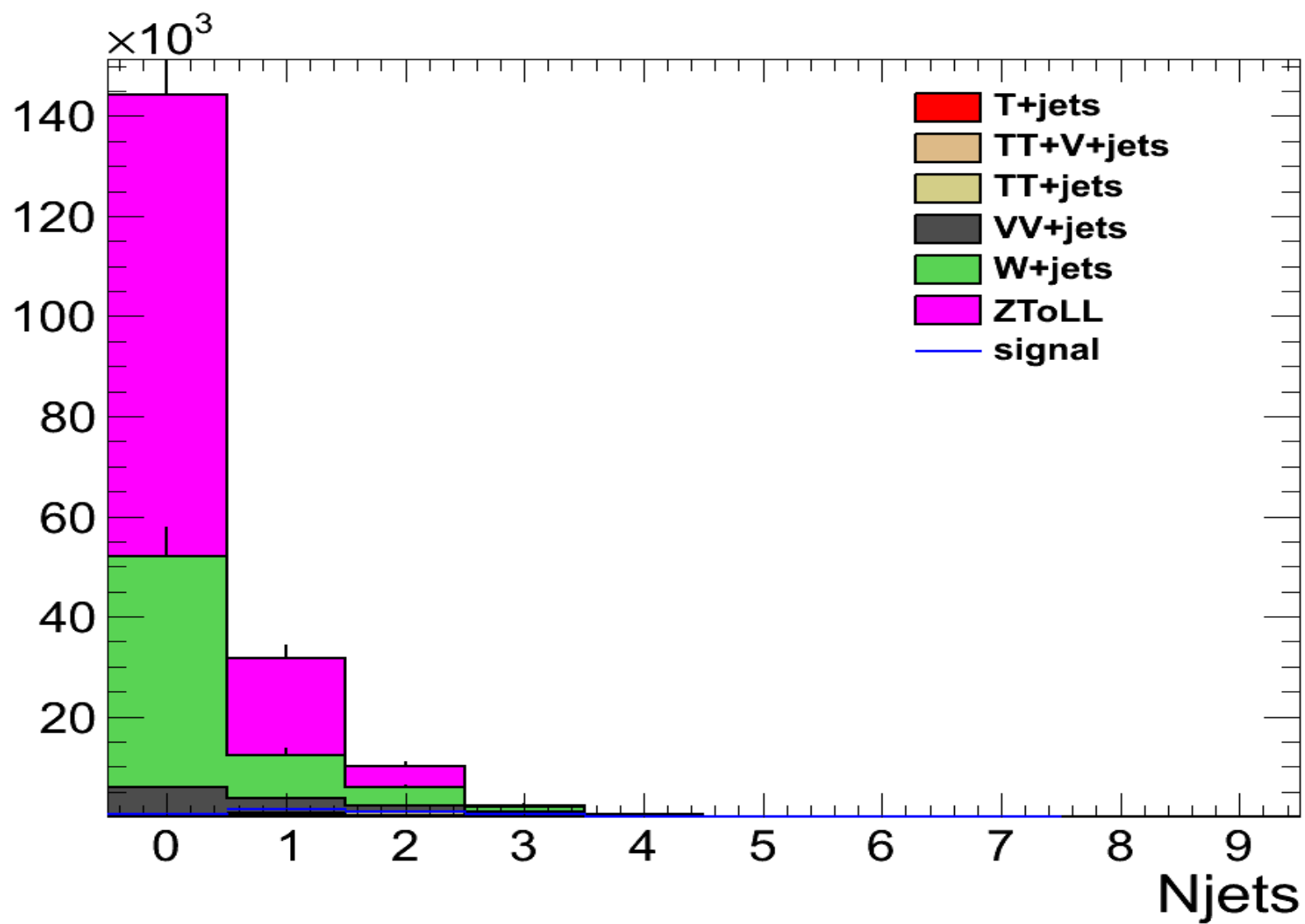


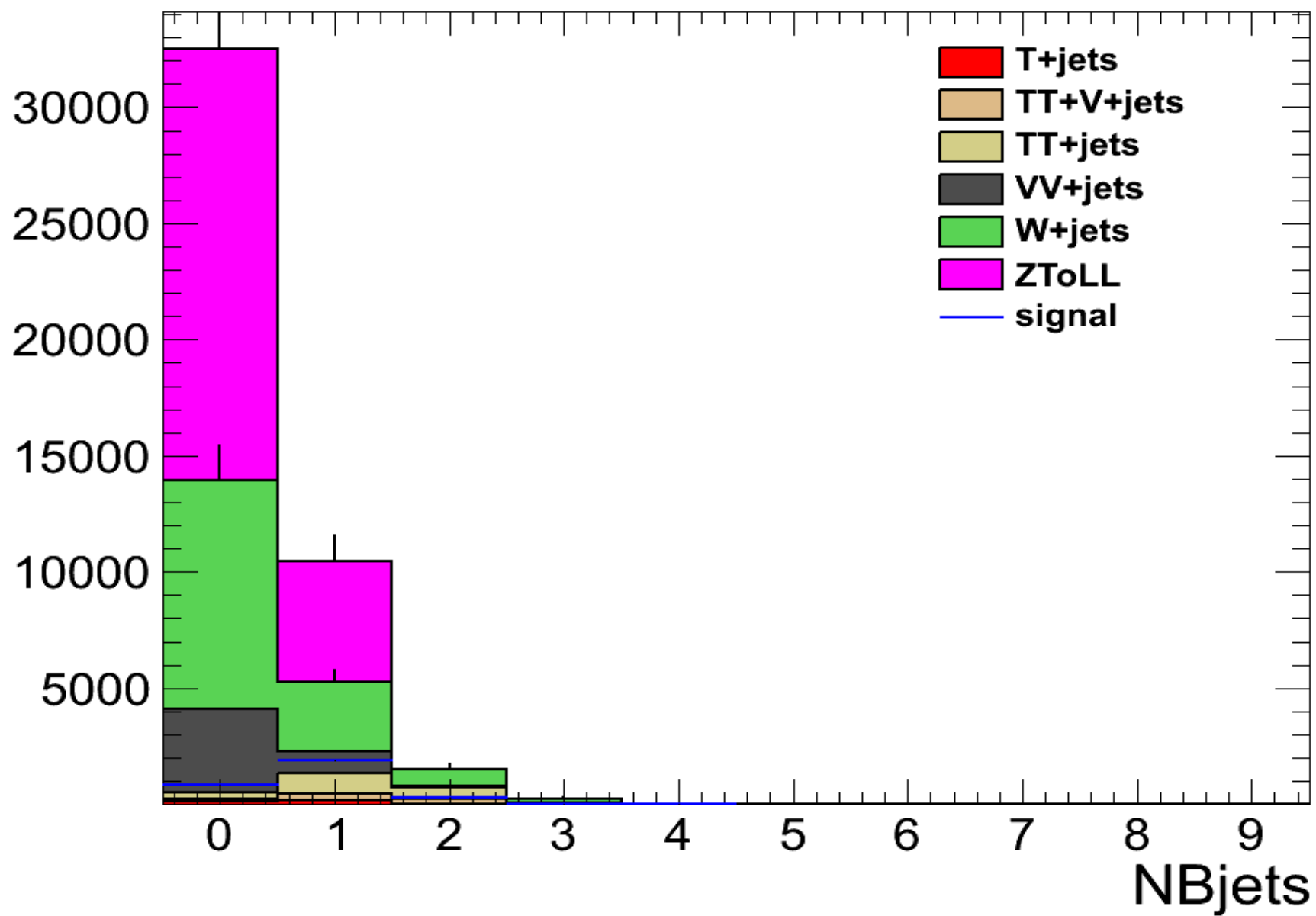
# Super-short update

Single top  $tH \rightarrow$  same sign dilepton

# Object and event selection

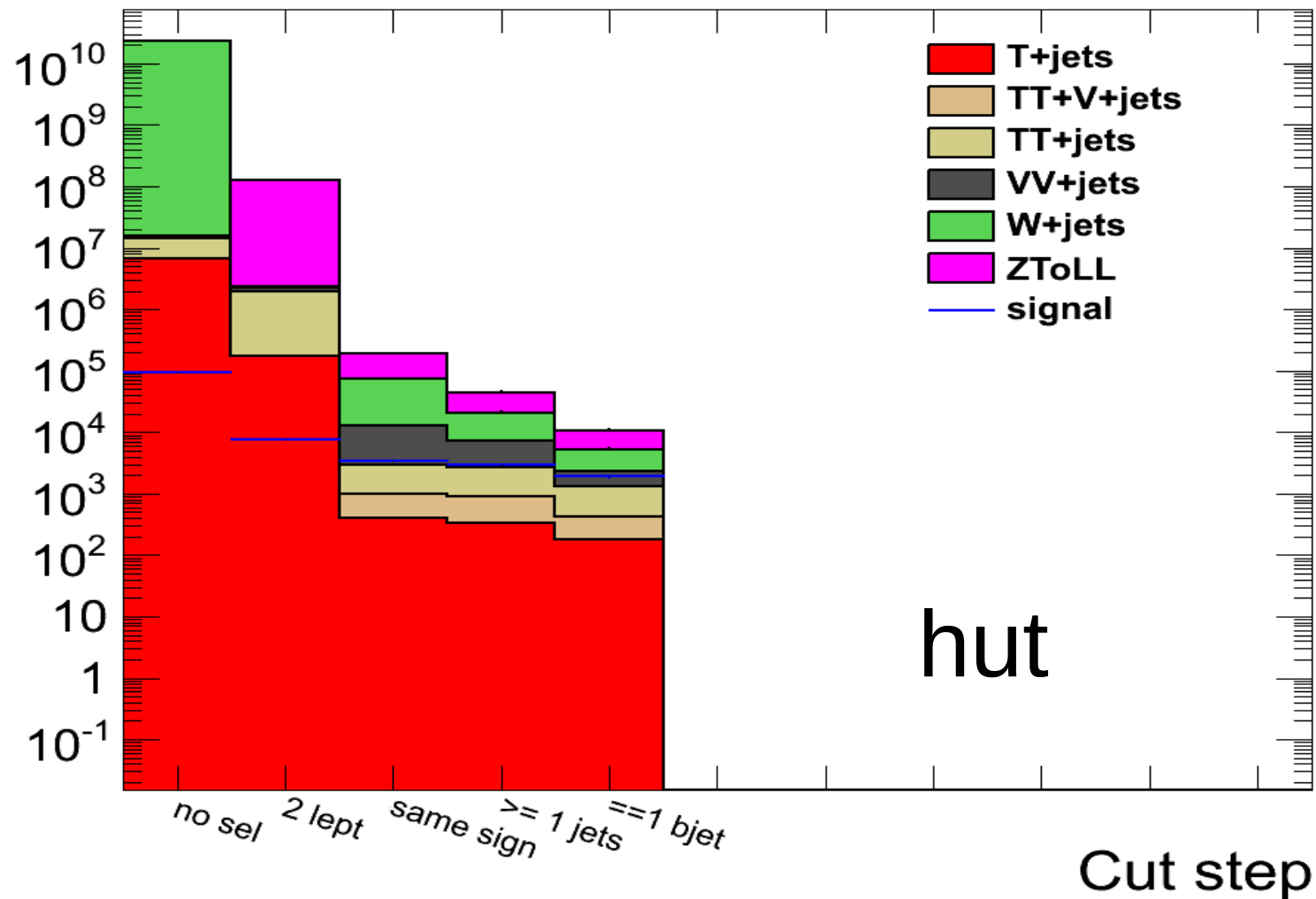
- Lepton selection :
  - $p_T > 10 \text{ GeV}$ ,  $|\eta| < 2.5$ ,
  - Combined isolation (cone of 0.4)  $< 0.2$  for both electrons and muons.
- Jet selection :
  - $p_T > 30 \text{ GeV}$ ,  $|\eta| < 2.5$ ,  $E_{\text{E}}/E_{\text{H}} < 0.3$ ,
  - Remove selected leptons from the jet collection.
  - Btagging : loose WP.
- Charge mis-reconstruction of electrons 0.3 % in the endcap, 0.03 % in the barrel (from ttH CMS paper).
- Event selection :
  - Exactly 1 selected leptons,
  - Same sign leptons, leading lepton  $p_T > 20 \text{ GeV}$ , other lepton  $p_T > 10 \text{ GeV}$ ,  $M_{\text{ll}} > 12$ .
- At last one selected jet.
- Exactly one b-tagged jet.





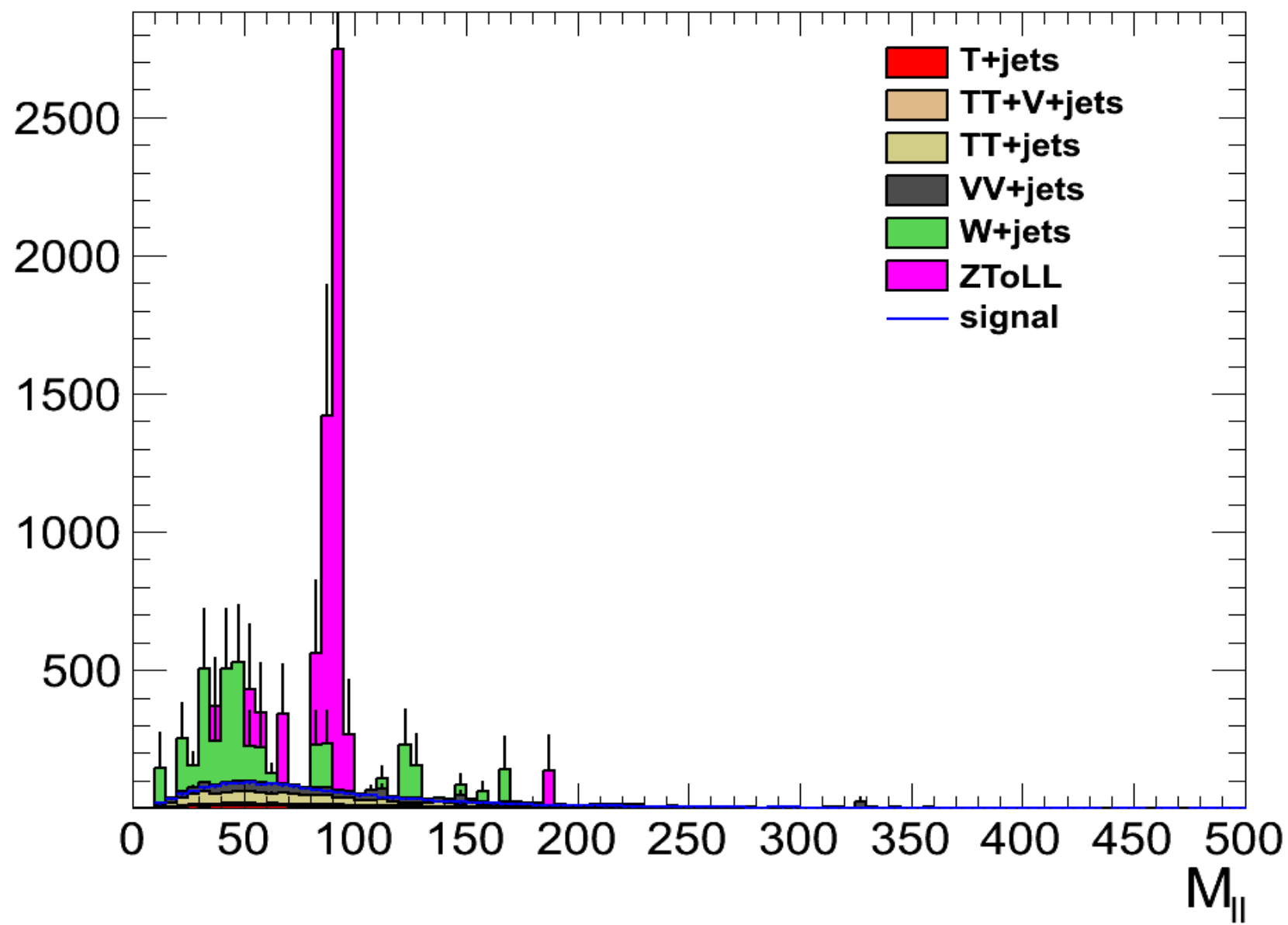
# Cutflows

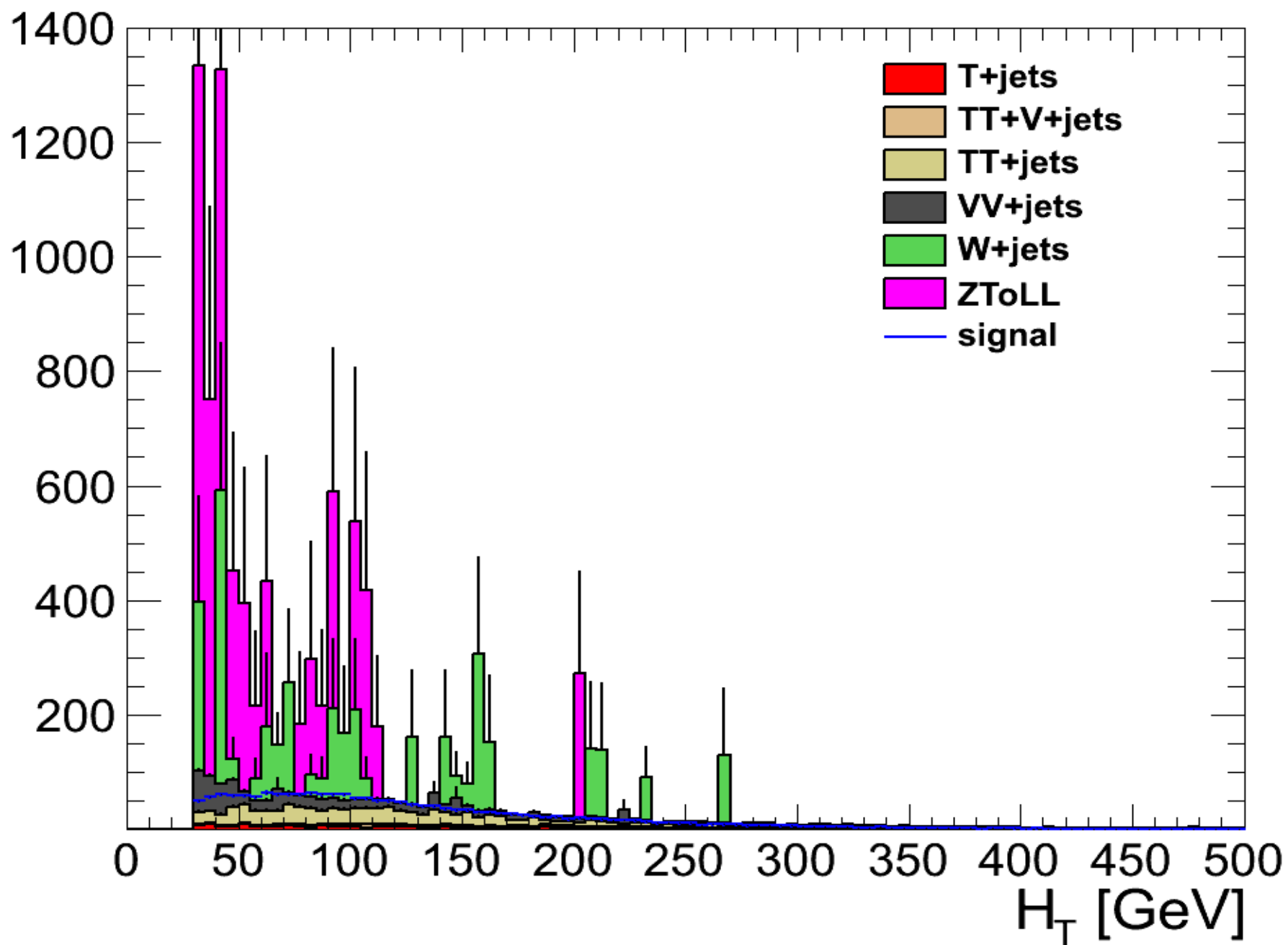
## couplings at current limits

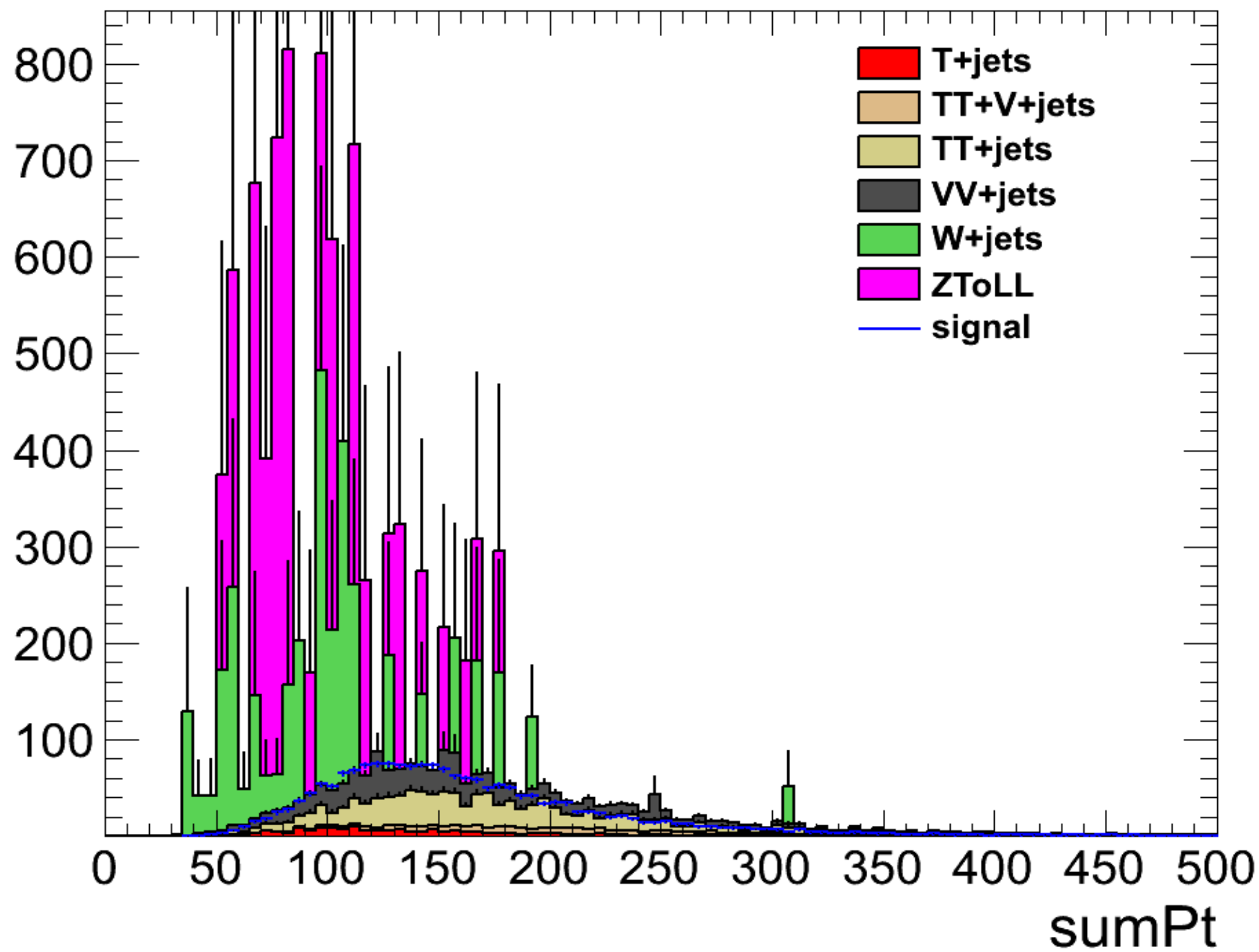


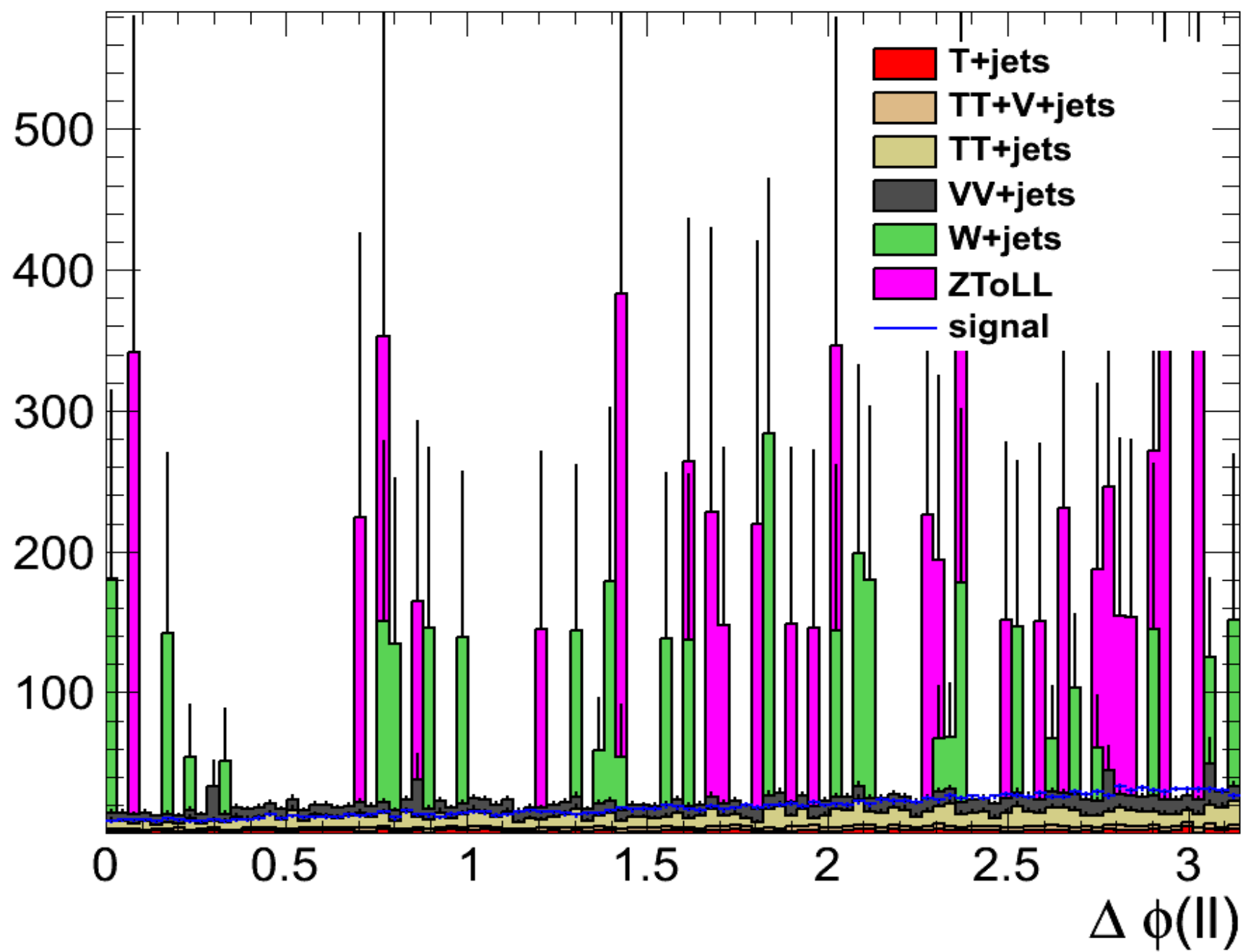
# Possible discriminating variables

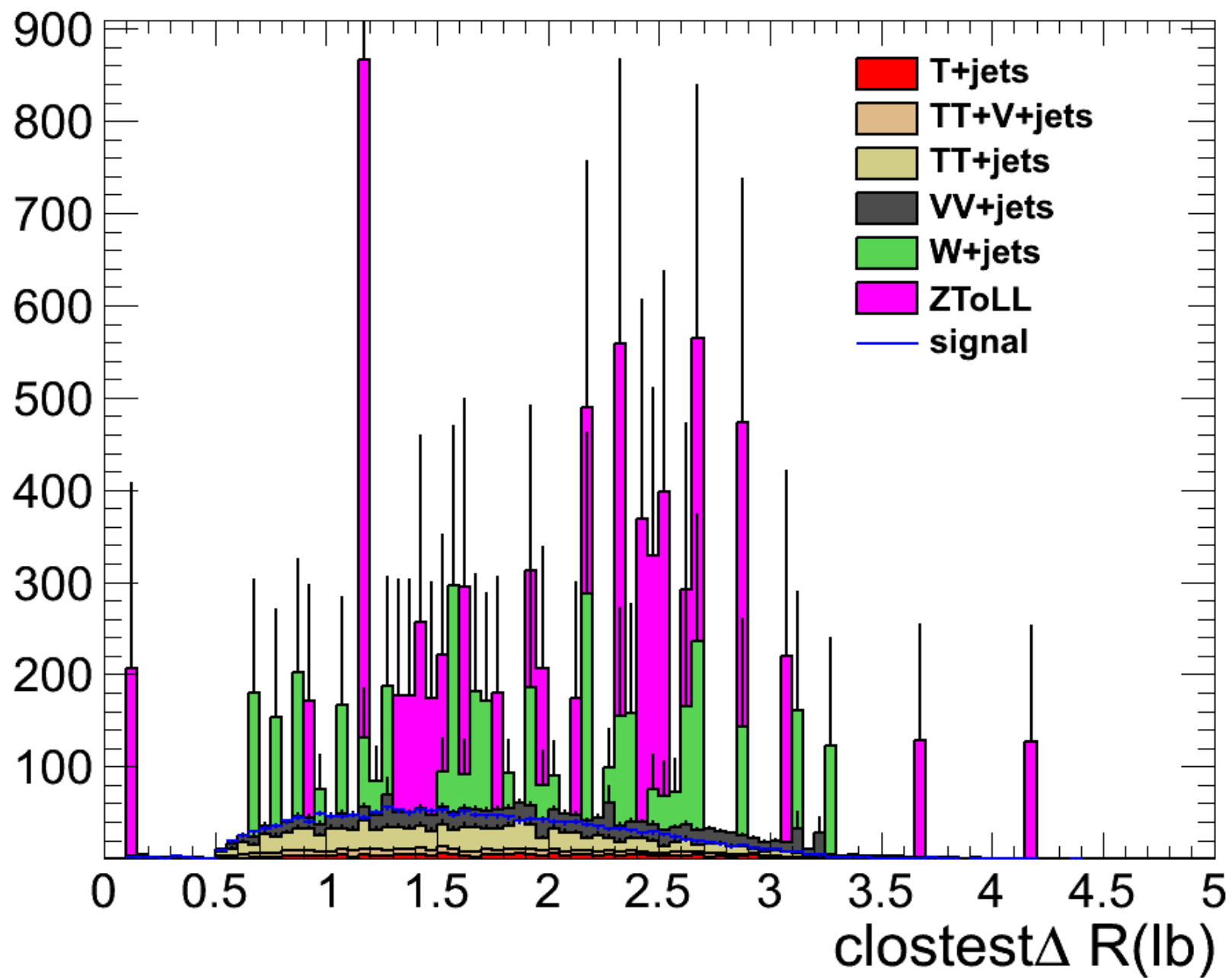
- Variables to cut on, or to be used in a Multivariate Analysis :
  - Dilepton invariant mass,
  - Angles between leptons,
  - Angle between leading lepton and the bjet,
  - $p_T$  of the leading jet,
  - $p_T$  of the leading lepton and subleading leptons
  - $H_T$ ,  $S$  and sum  $p_T + MET$ ,
  - $MET$ .

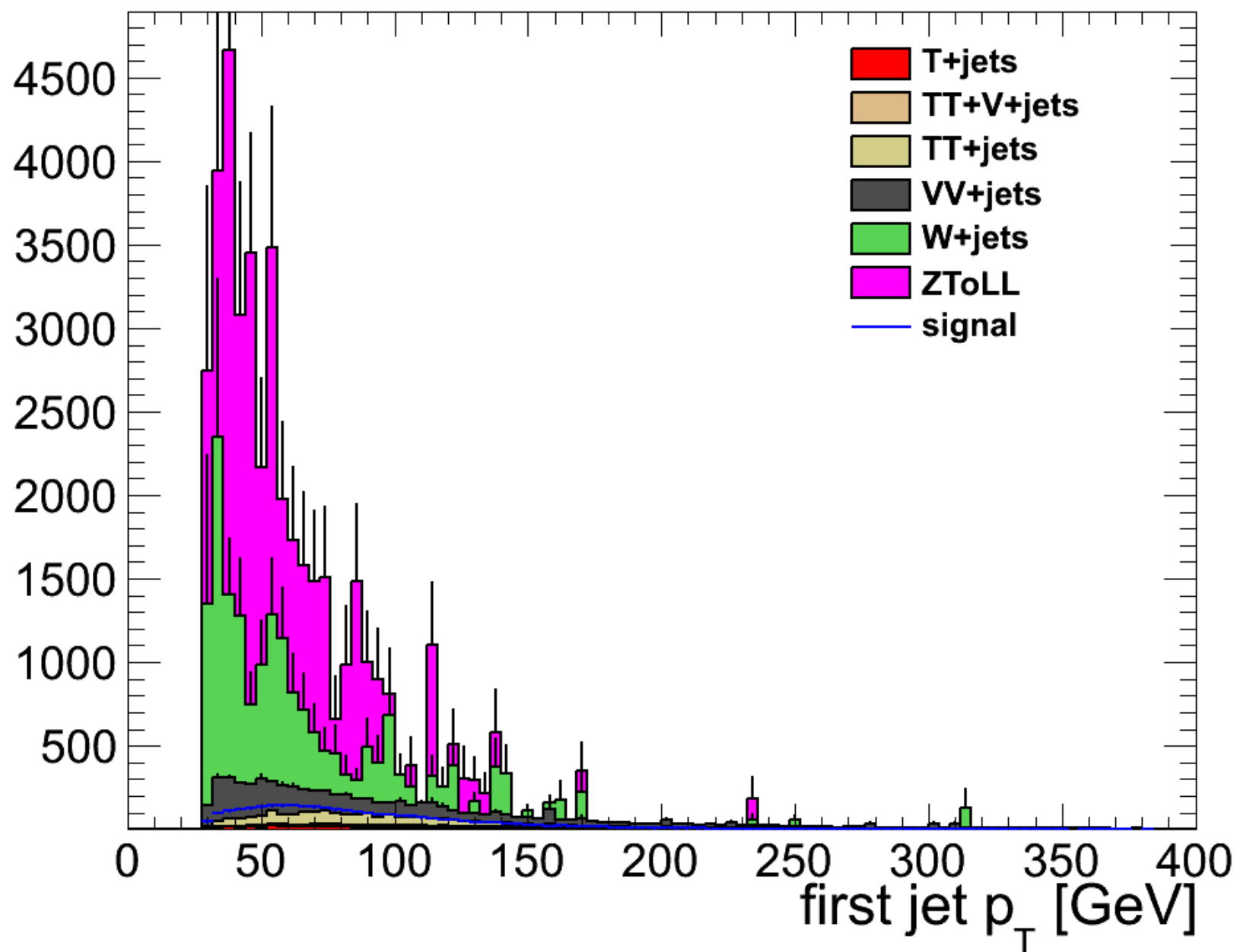


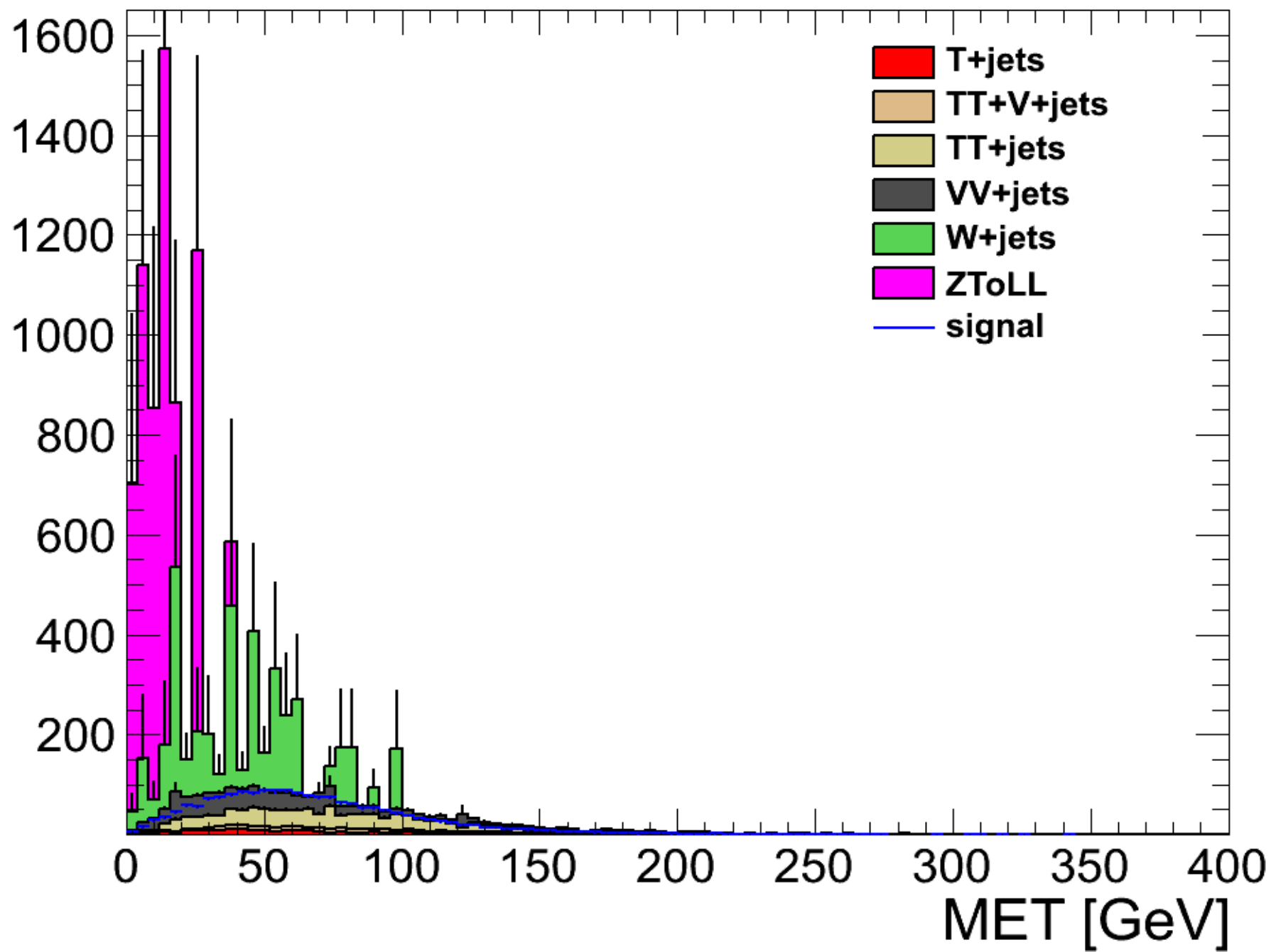












# Conclusion and plans

- Basic event selection done, some optimization needed :
  - $p_T$  of the sub-leading lepton,
- First list of interesting variable for the BDT spotted.
- But much more statistic needed for Z+jets and W+jets...
- Issue with single top t-channel (txt file name changed, don't know what's in it and what to use, tests crashes).