

Status report on MC sample test

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On-going Projects (to do list)

1. Flavour tagging (LCFIPlus)

- Improve/fix my processor to check the performance
- Check DBD samples with the current software
- Try an option to reduce the beam bkg for 500 GeV w/ bg samples

2. Mono photon sample assigned to Ahmed

- So far no progress because Ahmed was busy these days, but he resumed his research activity this week.
- Started from learning how to use ilcsoft.

3. ttbar sample (semi leptonic)

- Use a realistic isolated lepton finder

4. ttbar sample (full hadronic)

- Some preliminary plots in the following pages.

Look at :
energy resolution
mass resolution, etc

**Preliminary results on
 $t\bar{t}$ full hadronic samples**

Sample used in this report :

- 6f-ttbar full hadronic (w/ bg) : yyuyyu, yyuyyc, yycyyu, yycyyyc
- mixed polarisations and processes,
- ~200k events in total,
- ILD_l5 model, (not yet ILD_s5)
- ilcsoft v01-19-05

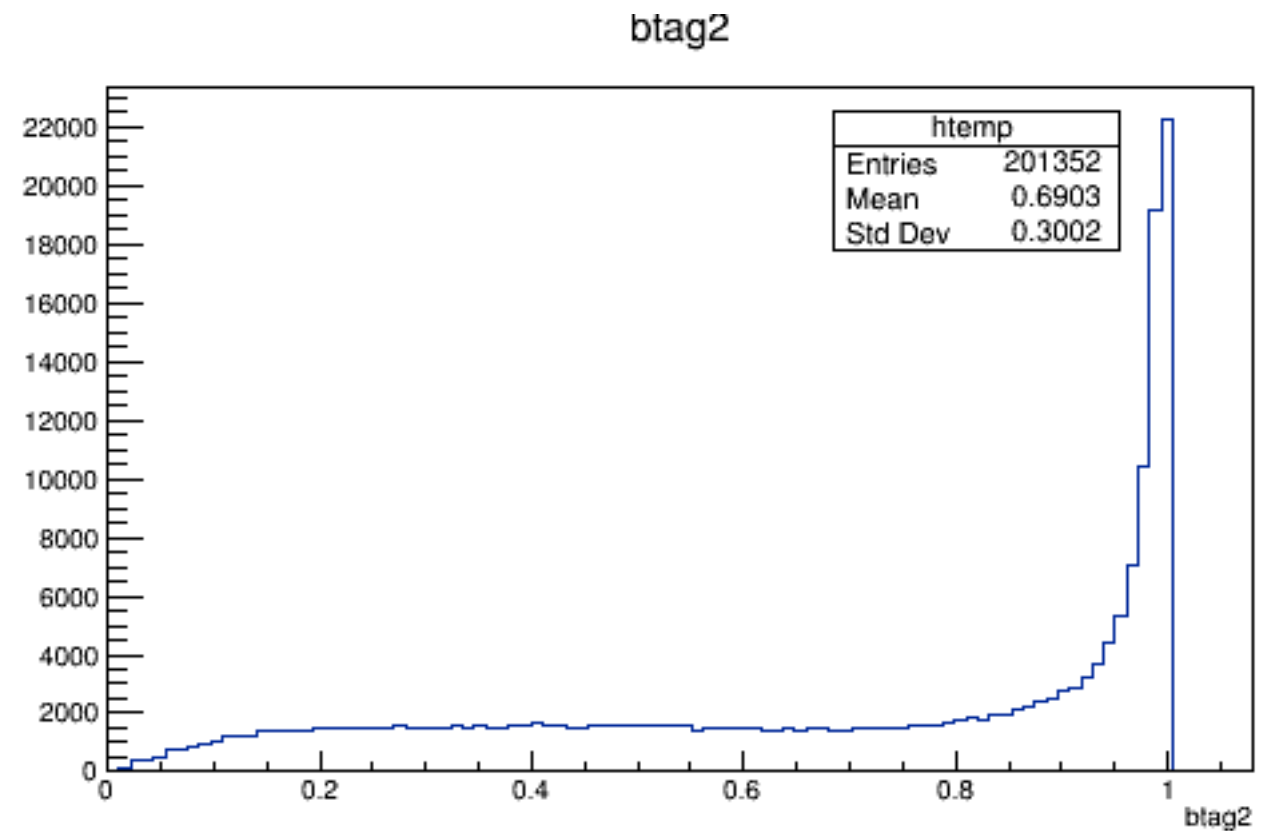
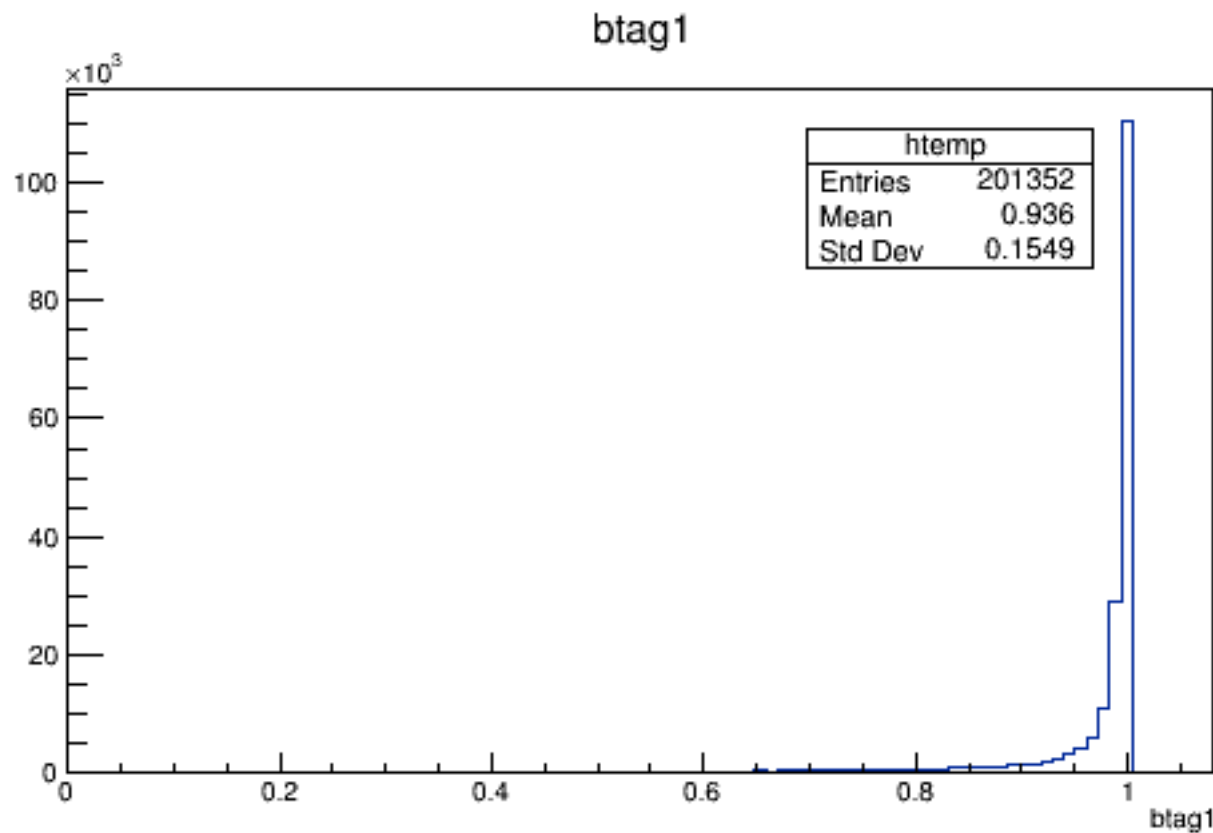
First trial with a simple event reconstruction flow :

- 1) Jet clustering (6J) and flavour tagging with LCFIPlus.
(The data trained by 91 GeV samples was used for flavour tagging.)
- 2) Picking up four jets that have the lowest b-likeness as two W jets.
- 3) Finding a best jet-combination for $t \rightarrow bW \rightarrow bqq$ by mass constraint.

$$\chi^2 = \frac{(m_{W_1}^{\text{reco}} - m_W^{\text{ref}}(= 80.0))^2}{\sigma_W^2(\sim 6.0^2)} + \frac{(m_{W_2}^{\text{reco}} - m_W^{\text{ref}}(= 80.0))^2}{\sigma_W^2(\sim 6.0^2)} + \frac{(m_{t_1}^{\text{reco}} - m_t^{\text{ref}}(= 174.0))^2}{\sigma_t^2(\sim 14.0^2)} + \frac{(m_{t_2}^{\text{reco}} - m_t^{\text{ref}}(= 174.0))^2}{\sigma_t^2(\sim 14.0^2)}$$

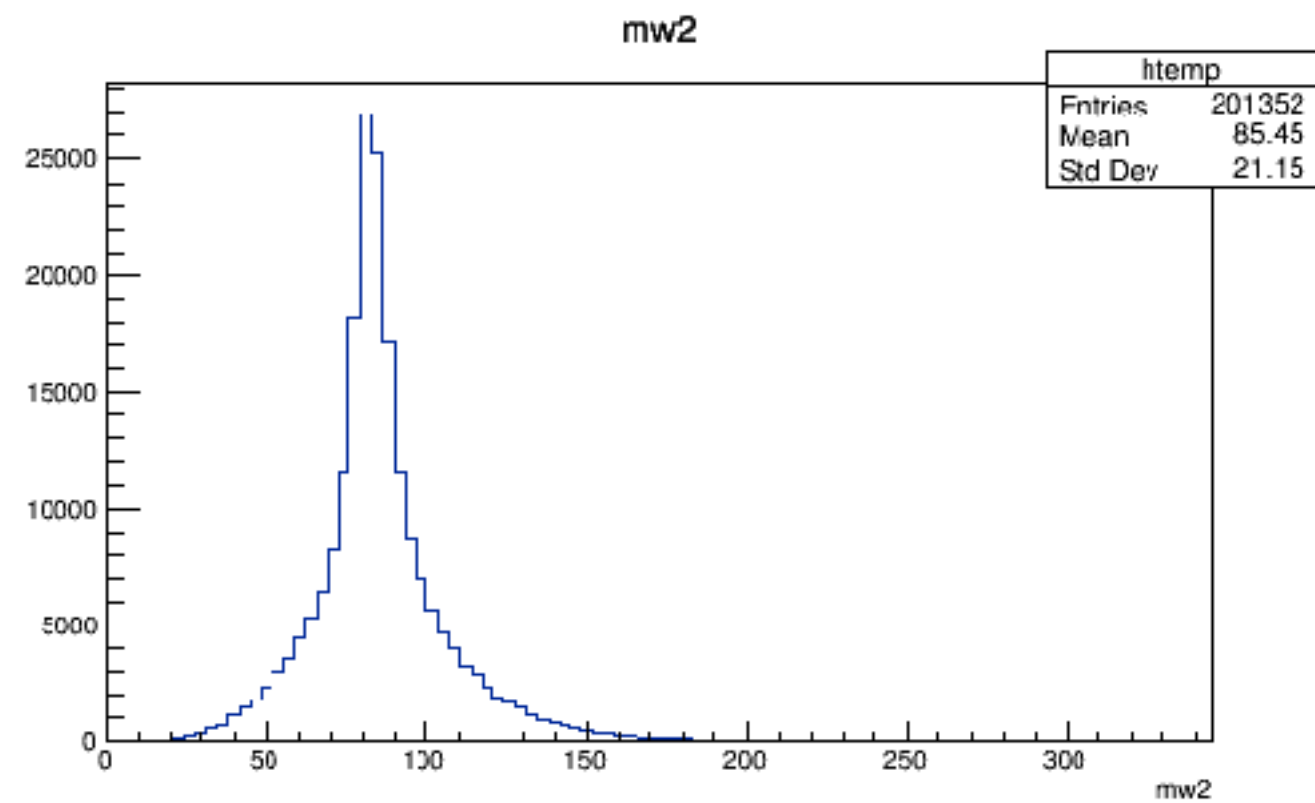
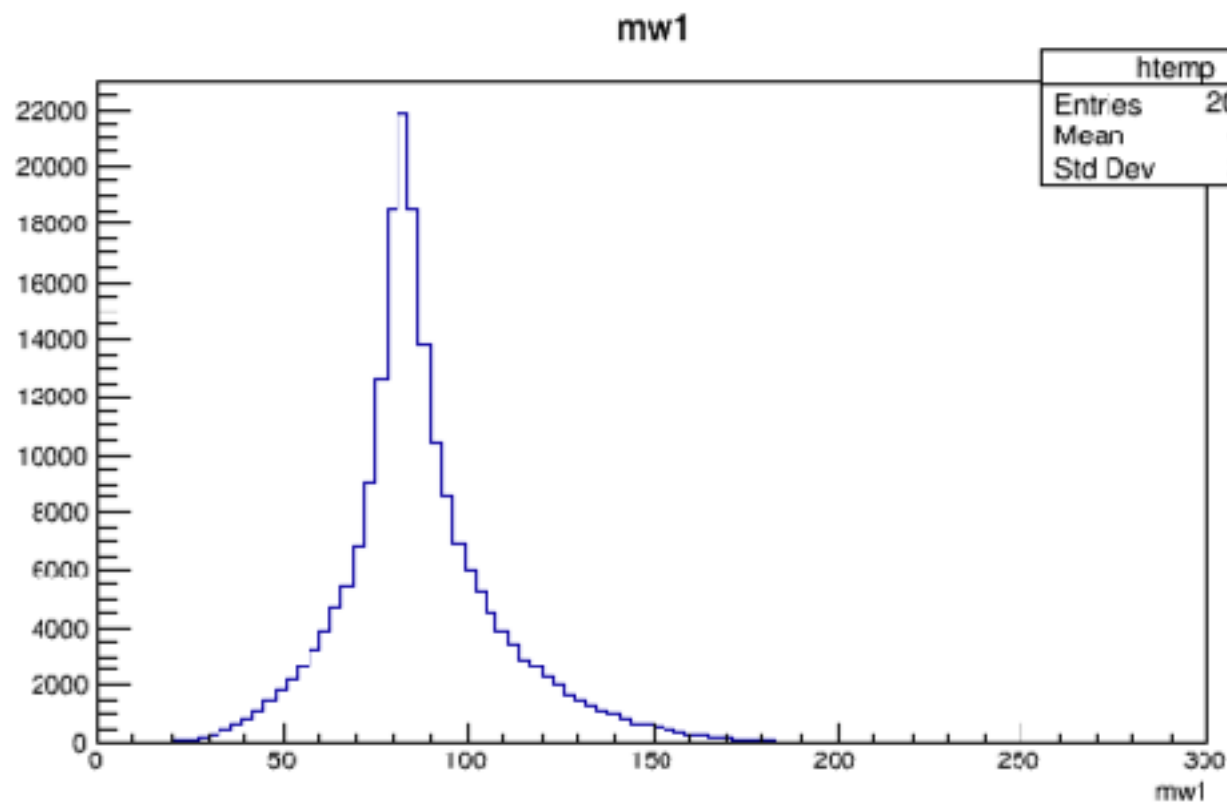
b-tagging

We have 6 jets in each event (forced 6 jet clustering).
btag1 is defined as the highest b-tag value among 6 jets.
btag2 is defined as the second highest one.



Reconstructed W mass

No physical meaning of the indices.



Reconstructed top mass

No physical meaning of the indices.

