

# Status of $t\bar{t}$ full hadronic decay studies @ 500 GeV

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*(under supervision of Roman Poeschl)*

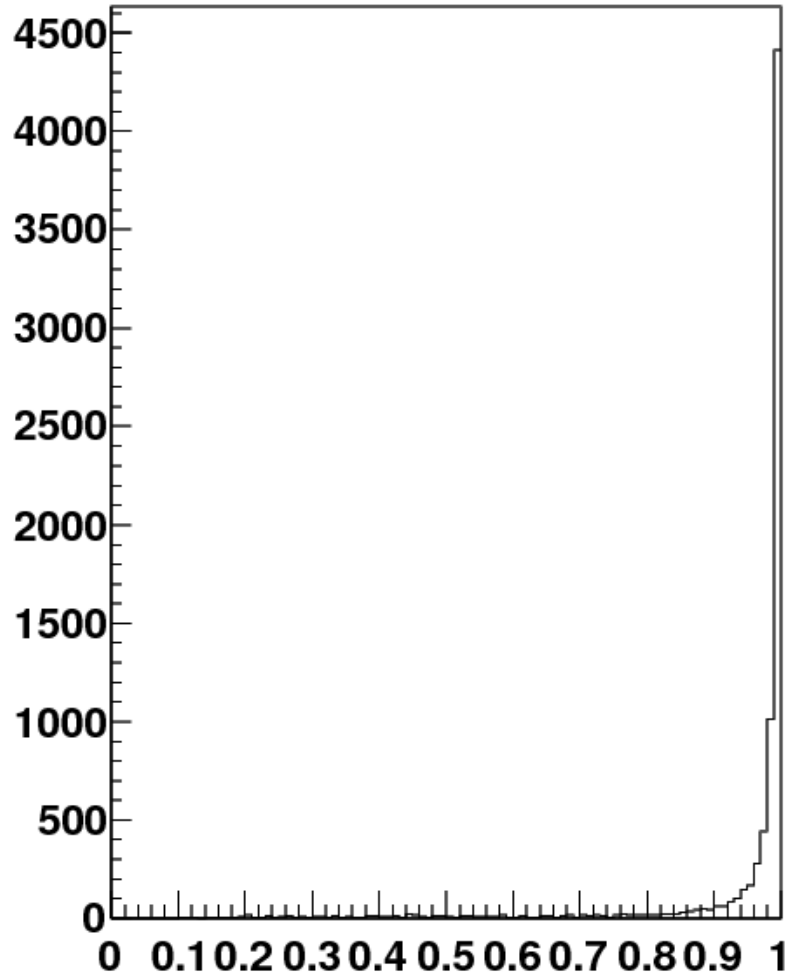
*LAL, Orsay*

# Background

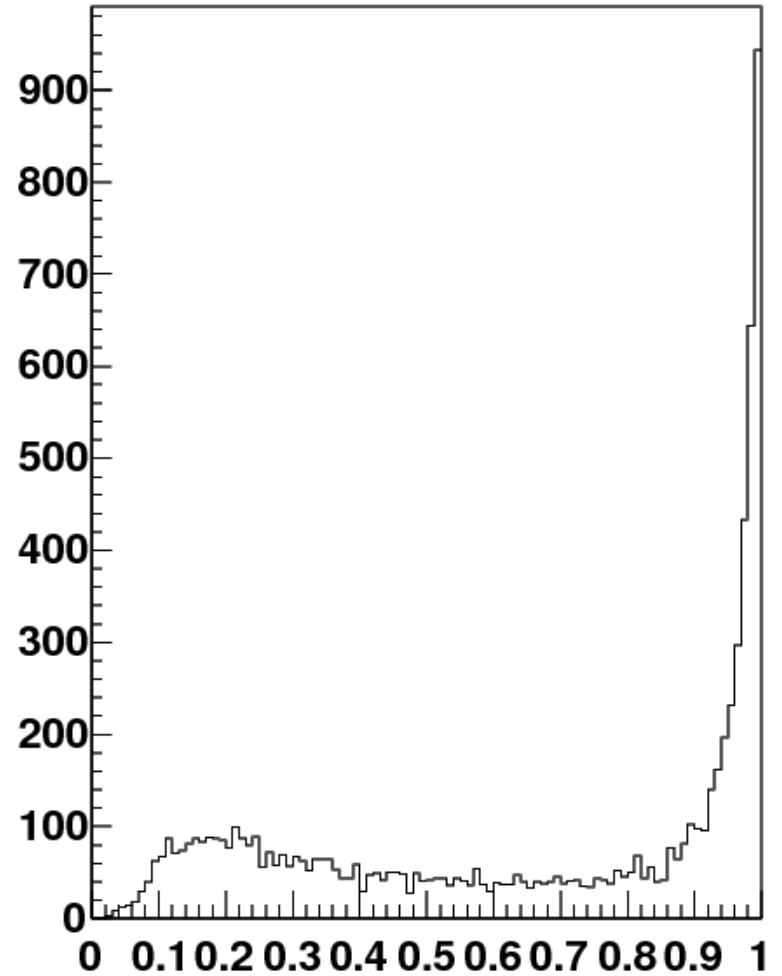
- The aim of studies is to study the Forward/Back Asymmetry in the fully hadronic channel.
- I use DBD samples at 500 GeV with ILCSoft(v01-16) and LCFIPlus (v00-05-02).
- Jeremy Rouene is already doing the semi-leptonic channel.

# B-tagging

BTag\_jet0



BTag\_jet1



# Reconstruction

- After having tagged the b-jets, out of the rest of four jets, I choose the best combination of jets, making 2 Ws, by minimizing the variable

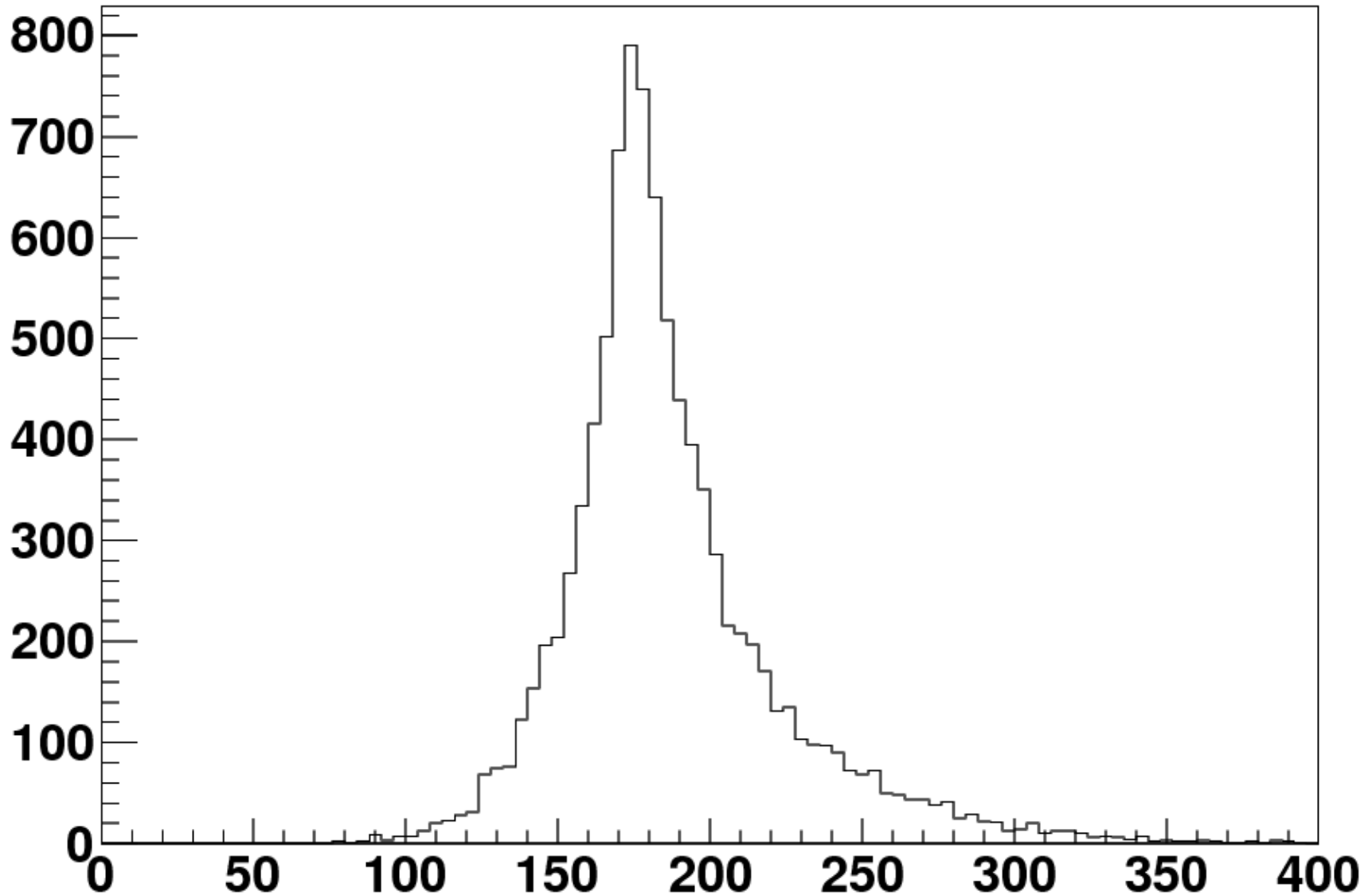
$$\mu = |m_{ij} - m_w| + |m_{kl} - m_w|$$

Where i,j,k,l are four different jets.

The Similar Approach is then followed for choosing a combination of two top quarks, along with minimization of Chi2.

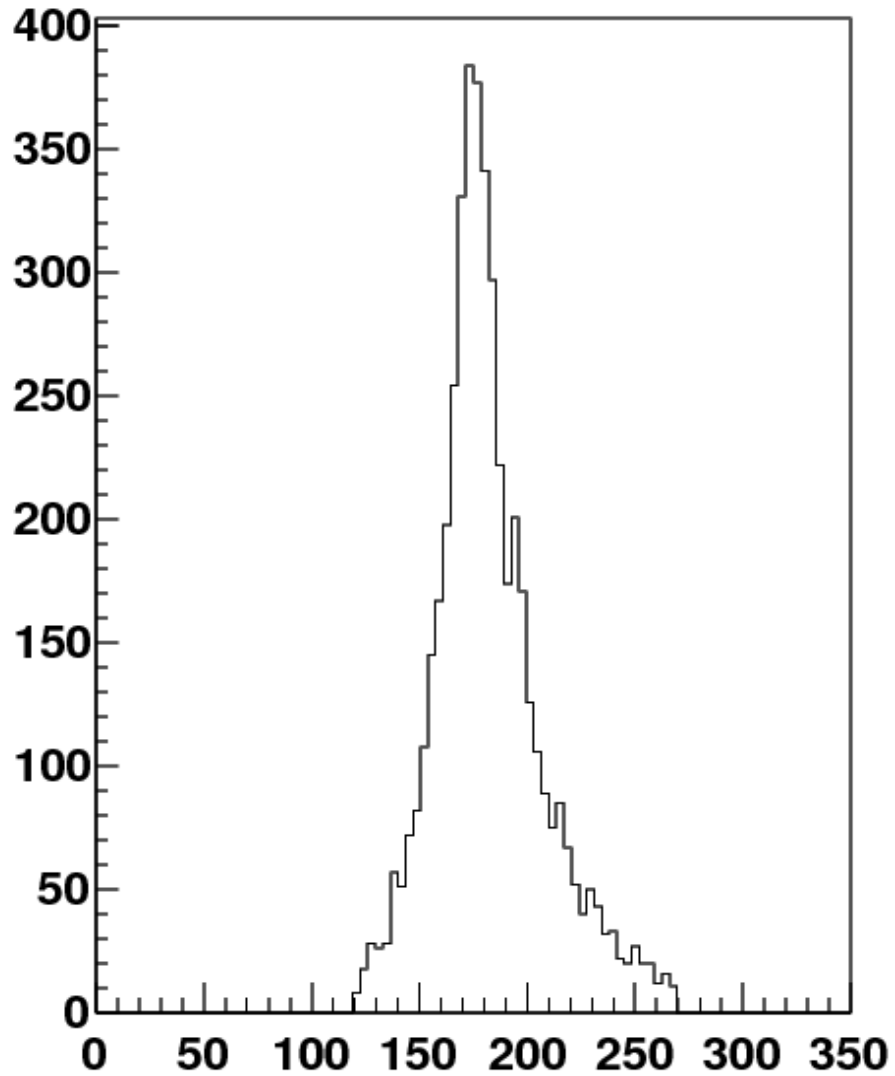
$$\chi^2 = \frac{(m_t - 174)^2}{(\sigma_{m_t})^2} + \frac{(E_t - 250)^2}{(\sigma_{E_t})^2} + \frac{(p_b^s - 69)^2}{(\sigma_{p_b^s})^2}$$

# Top Quark Mass

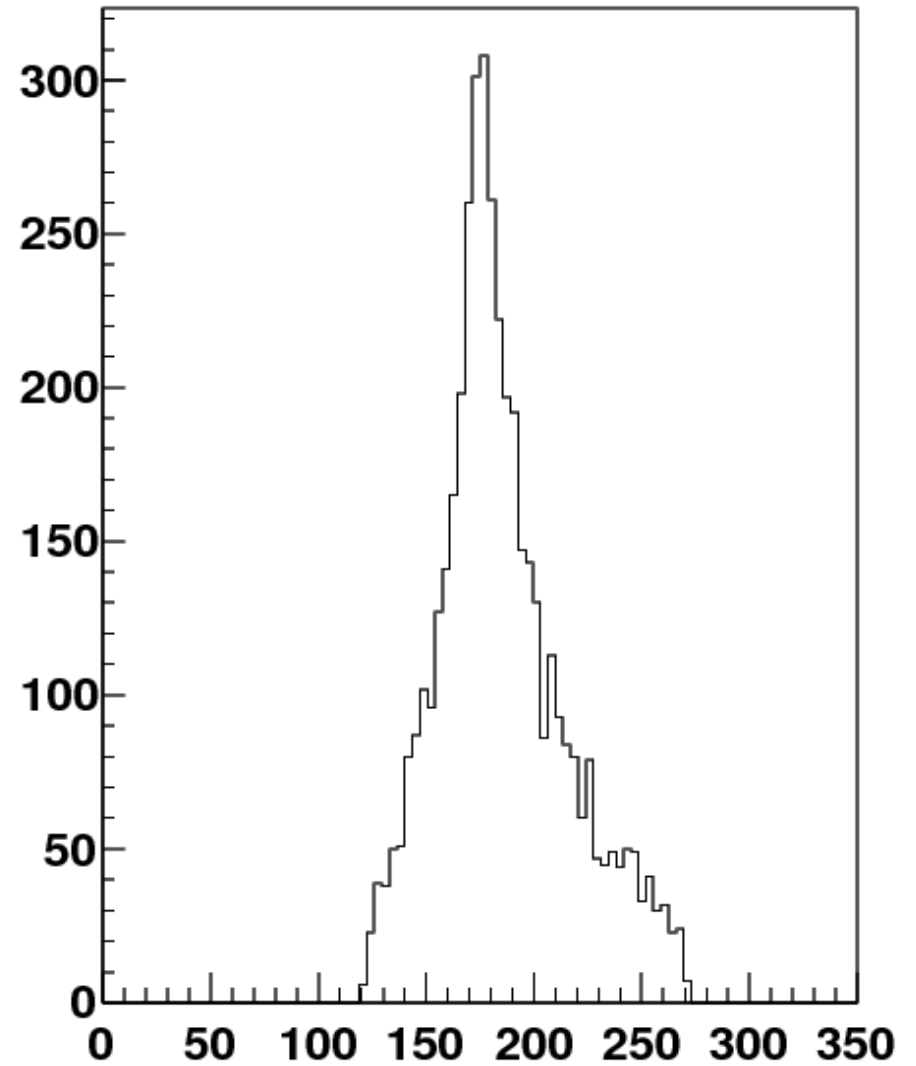


# Top Mass With some cuts

Top1\_Mass

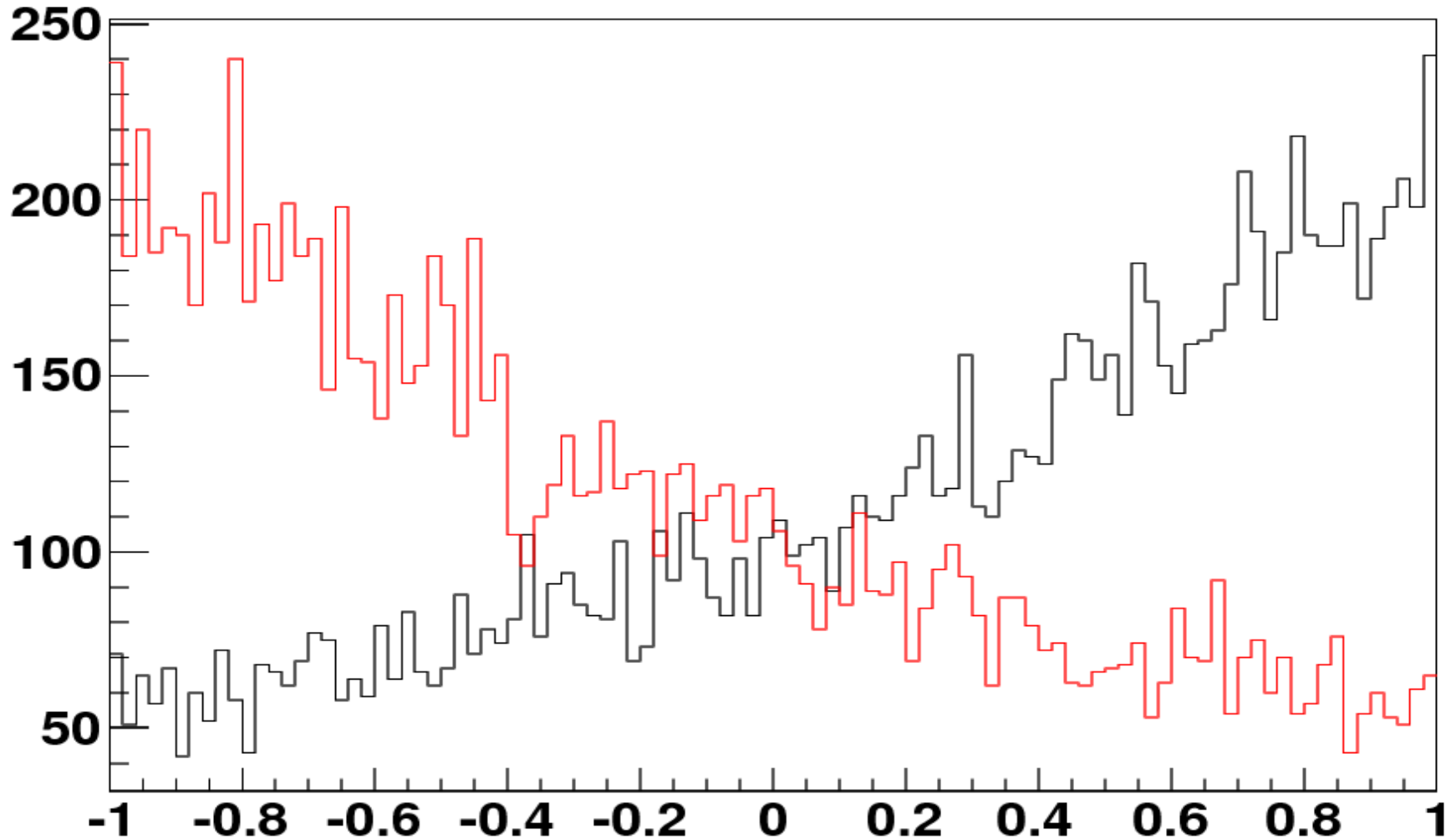


Top2\_Mass



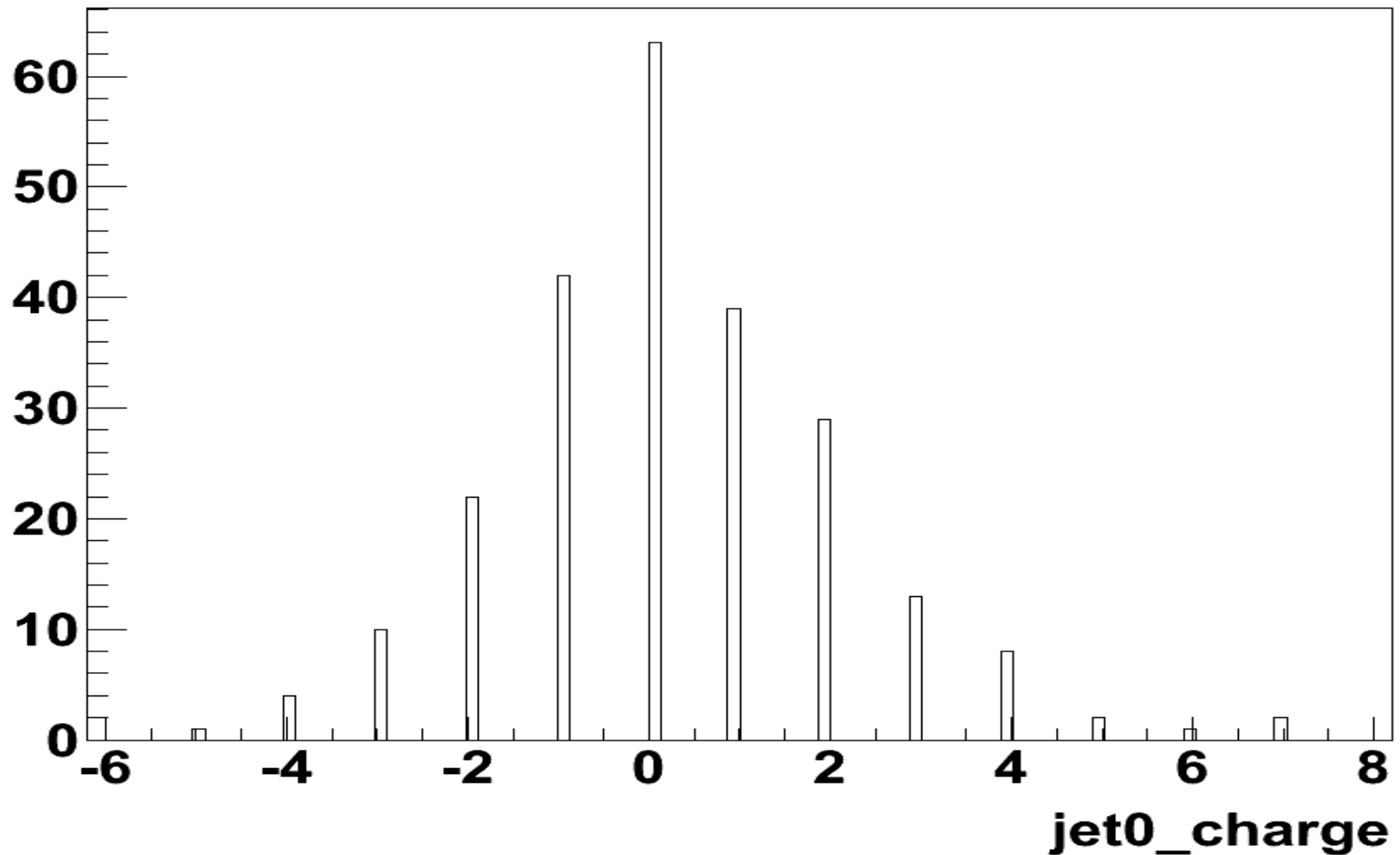
# Forward Back Asymmetry

MCCosThetaTop



# Jet Charge from RefinedJets

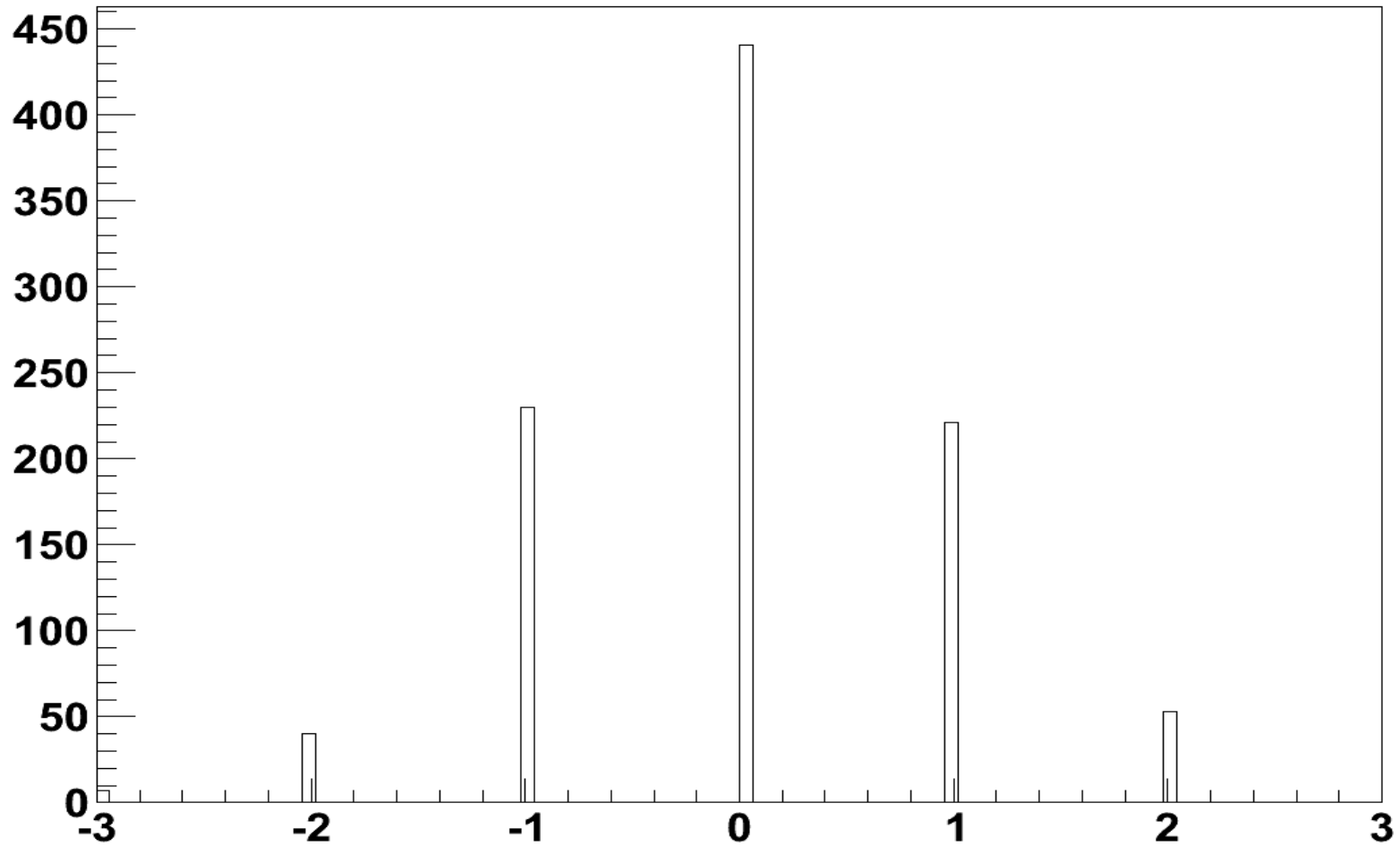
jet0\_charge



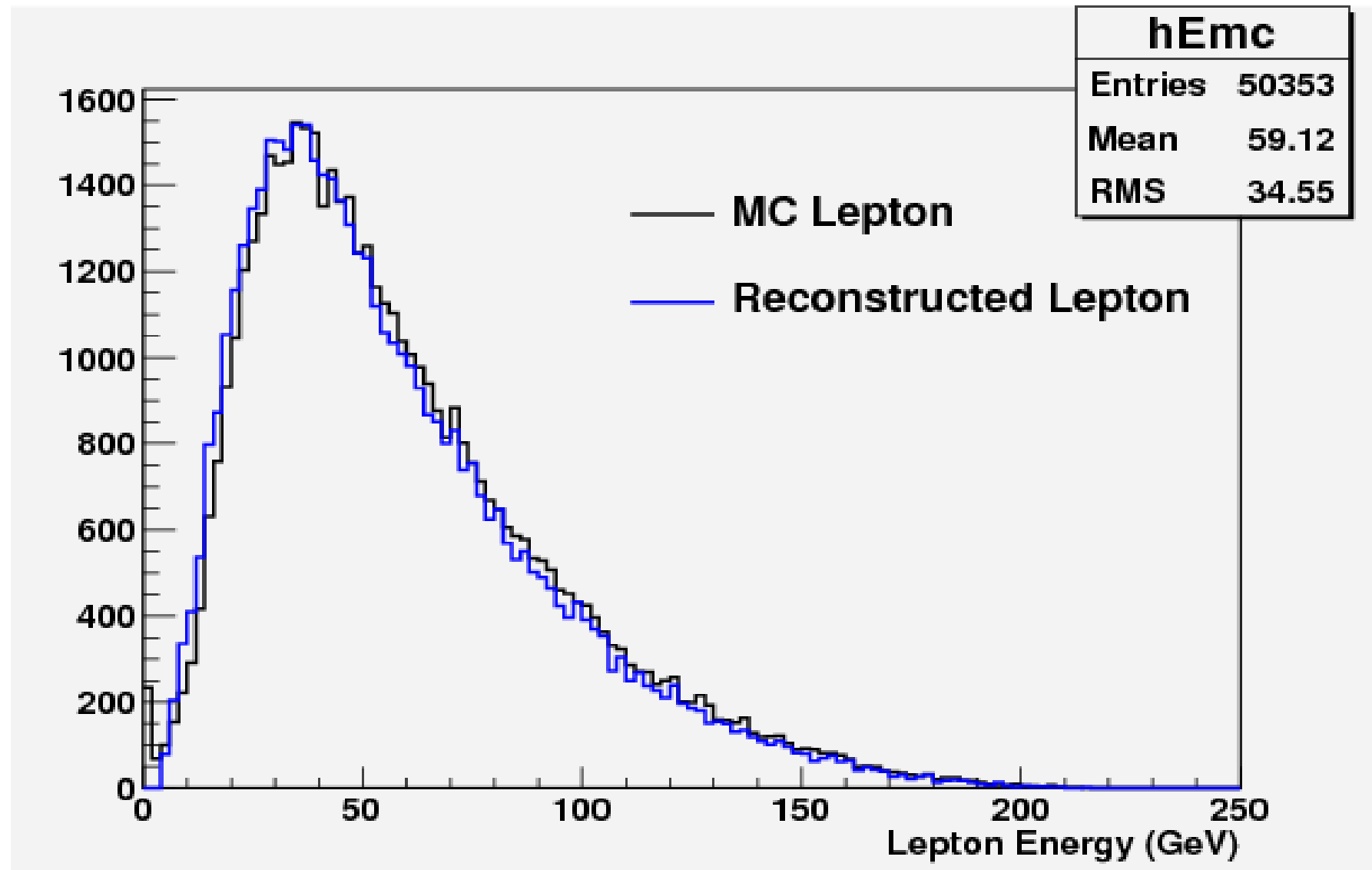


# Charge from the Vertex

Vertex\_Charge



# Energy of Lepton( Jeremy )



# Discussion

- The LCFIPlus is not optimized for jet charge.
- It is unclear how to use the tracks information to reconstruct the charge at Vertex.
- Thanks to Tomohiko, with whom I am in communication regularly.
- Using the LC Relation, passing from Jets to Vertex and vice versa may work (underprogress).