## Elements of top quark reconstruction

Three different final states:

- 1) Fully hadronic (46.2%)  $\rightarrow$  6 jets
- 2) Semi leptonic (43.5%)  $\rightarrow$  4 jets + 1 charged lepton and a neutrino
- 3) Fully leptonic (10.3%)  $\rightarrow$  2 jets + 4 leptons



- At hadron colliders it is difficult to identify Top pairs from QCD background
  => Use (mainly) one and two lepton final states
- At lepton colliders top pairs can be identified 'easily', analyses concentrate currently on fully hadronic and semi-leptonic Reco WS - July 2015



Figure 11.1: Energies and momenta of reconstructed objects in  $E_{\text{calo}}/P_{\text{track}}$  vs  $E_{\text{ecal}}/E_{\text{calo}}$  view. Real electrons (red) and muons (blue) are visualized among other particles which are charged hadrons (black).

A muon (blue in Fig. 11.1) is defined by:

$$E_{\rm calo}/P < 0.5$$
 (11.1)

An electron (red in Fig. 11.1) is defined by:

$$E_{\rm calo}/P < 0.8 \text{ and } E_{\rm ecal}/E_{\rm calo} > 0.9$$
 (11.2)

Reference PhD thesis Doublet

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Efficiency to find decay lepton: ~85% (e mu only), ~70% (e, mu, tau)

Reference PhD theses Rouene/Doublet

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