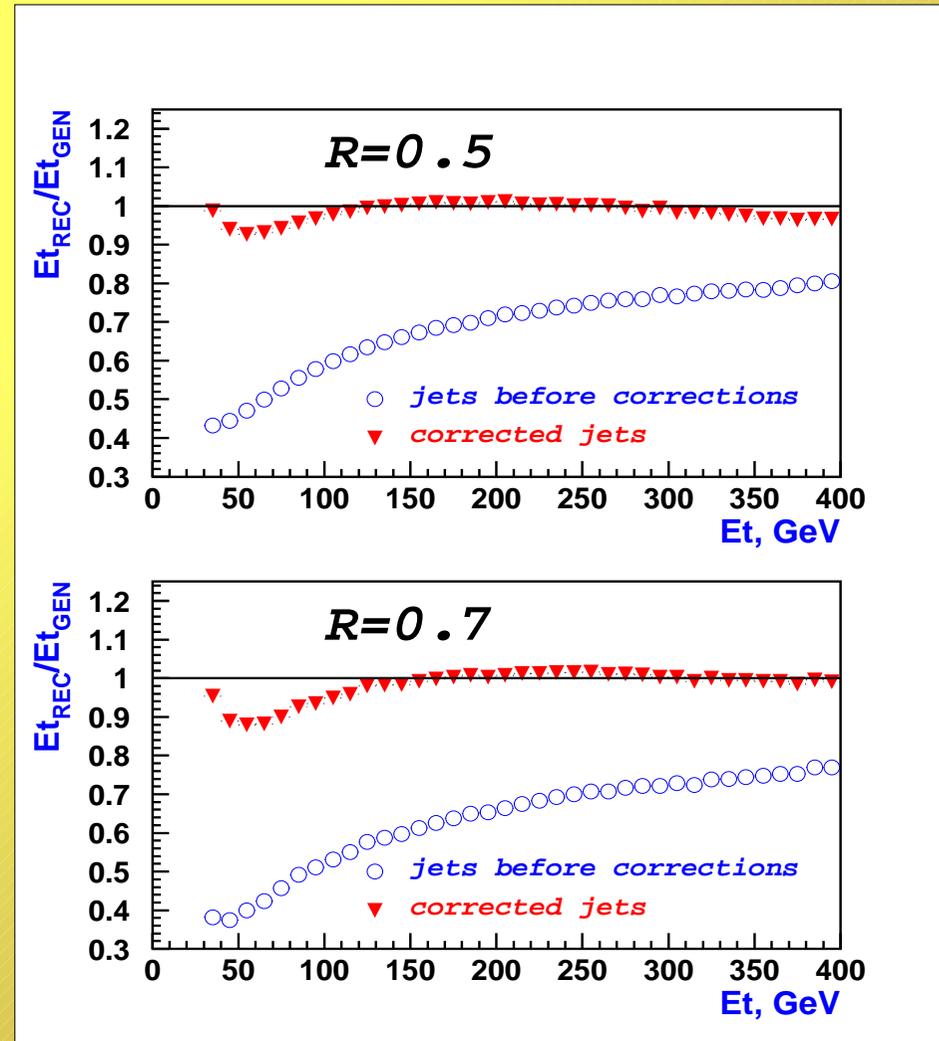
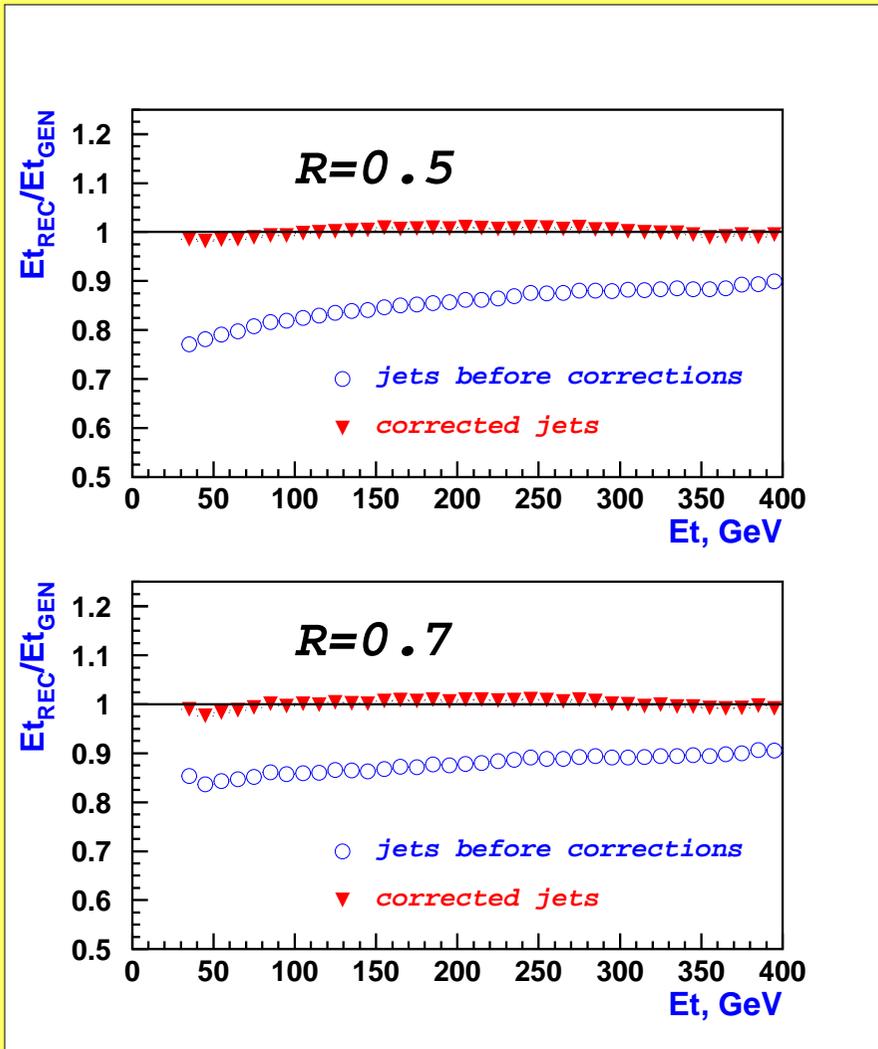
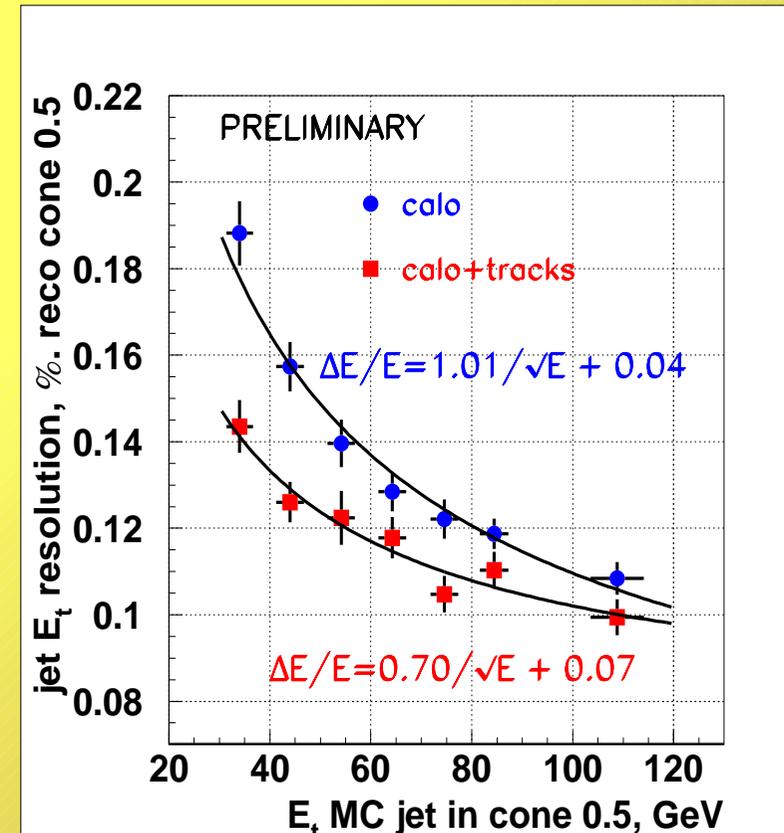
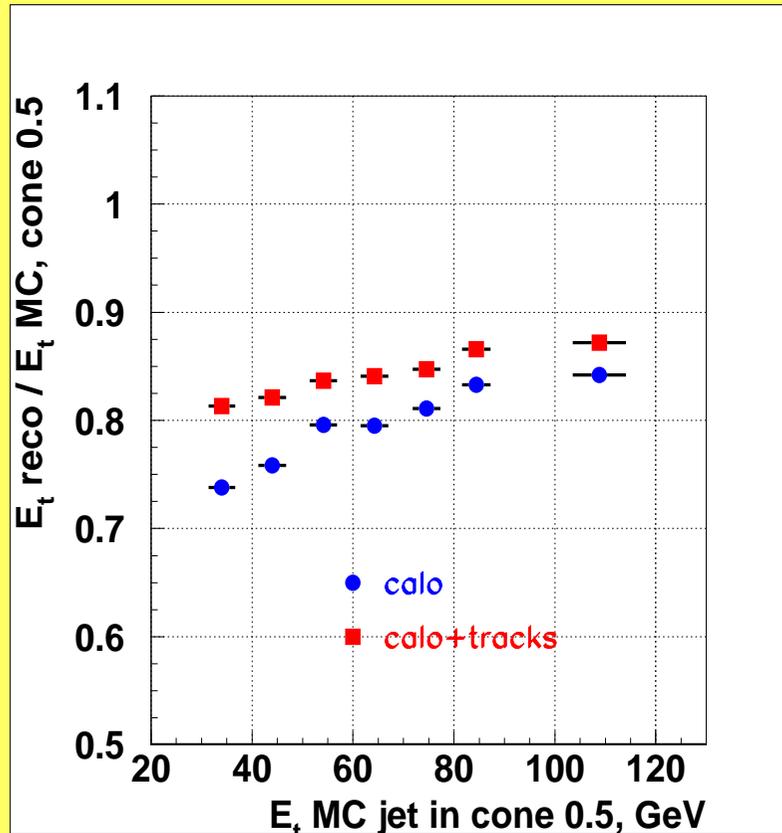


Jet correction with $E_{\text{rec}}(E_{\text{gen}})$ parametrisation: $E_{\text{jet}}^{\text{rec}} = A \times E_{\text{gen}}^2 + B \times E_{\text{gen}} + C$
 for luminosity 2×10^{33} (A.Krokhotine)



Linearity of jet energy is restored and resolution is slightly improved

*Usage of tracker for jet energy correction: step 1 (A.Nikitenko):
add out of reco cone charged tracks.*



*Calorimeter simulation
with cmsim122
MC track used.*

*Jet was selected on the
particle level and only
particles in $R=0.5$ were
propagated.*

Jet energy is calculated:

$$E_T^{jet} = E_T^{calo} + P_T^{out}$$

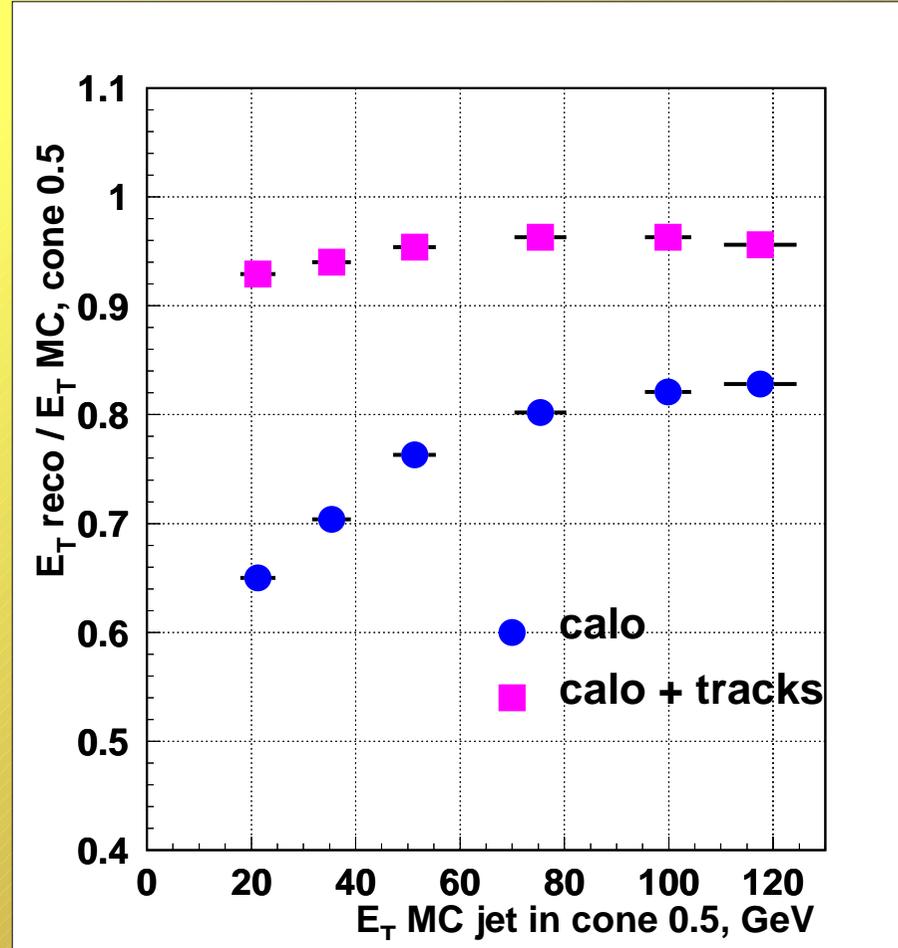
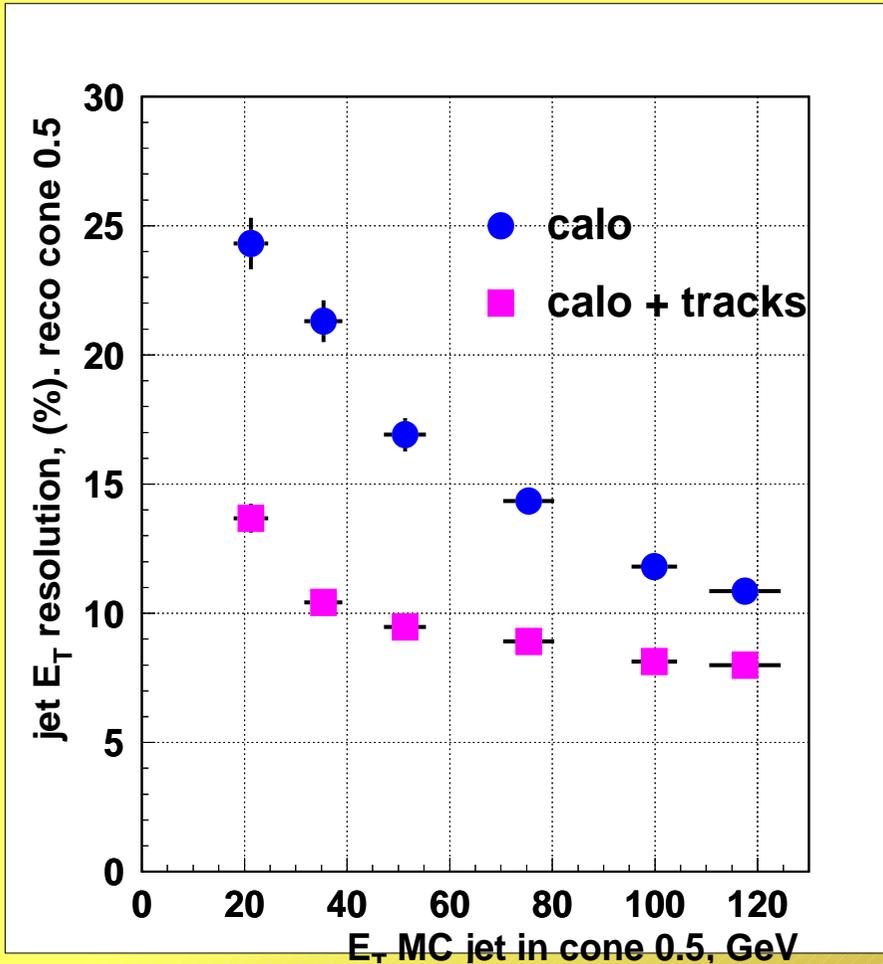
$$P_T^{out} - \text{tracks out of cone}$$

*Jet energy scale slightly improved.
Jet energy resolution improved essentially.*

Usage of tracker for jet energy correction: 2 (O.Kodolova, I.Vardanyan)
add out of reco cone charged tracks + response subtracting

For overlapping clusters expected response of matched tracks is subtracted within cone and add $\sum P_T^{trk}$ from tracker. Tracks out of cone are also added.

Expected response is calculated using the samples of single particles.



Essential improvement of resolution and linearity

**Usage of tracker for jet energy correction: step 3 (Dan Green) :
energy flow objects.**

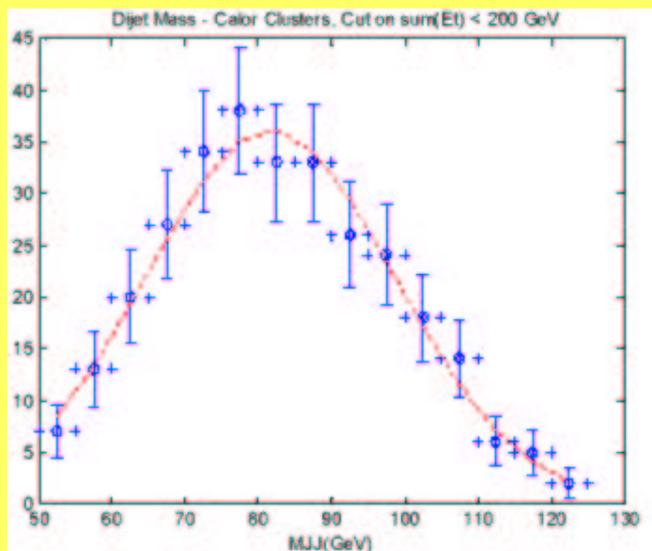
All clusters within cone matched with tracks were extracted from E_{jet}^{calo} and P_T^{trk} was added instead.

$$E_{jet} = E_{jet}^{calo} - E_{clus}^{in\ cone} + P_T^{trks\ in\ cone}$$

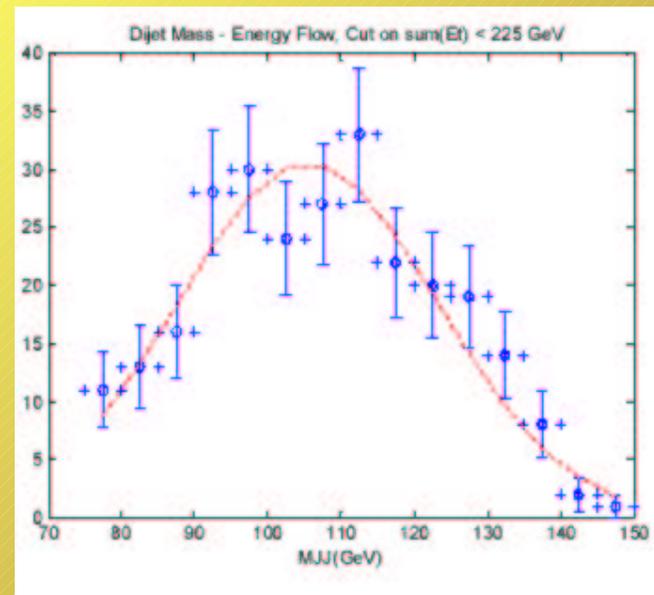
Calo clusters only

Dijet mass

Calo clusters+tracker



Mean=81.7+/-1.1 GeV
Sigma=17.1+/-1 GeV



Mean=105.5+/-1.1 GeV
Sigma=17.1+/-1 GeV

Summary

→ *Parametrisation for off-line and L1 jet energy correction can be used for physics analysis.*

→ *Rates for 1,2,3,4 L1 jet events were calculated.*

→ *For iterative cone algorithm have an optimal cone size in the case of presence noise, underlying event and pile-up .*

The next step is to use algorithm with event-by-event background subtraction.

→ *Usage of tracker information for jet energy recovering looks promising. Without real tracks reconstruction it gives improvement in resolution from 50% at low energy jets (20–40 GeV) to 25 % for 100 GeV jets.*

The next steps are to combine all 3 procedures and include the reconstruction procedure in tracker.