

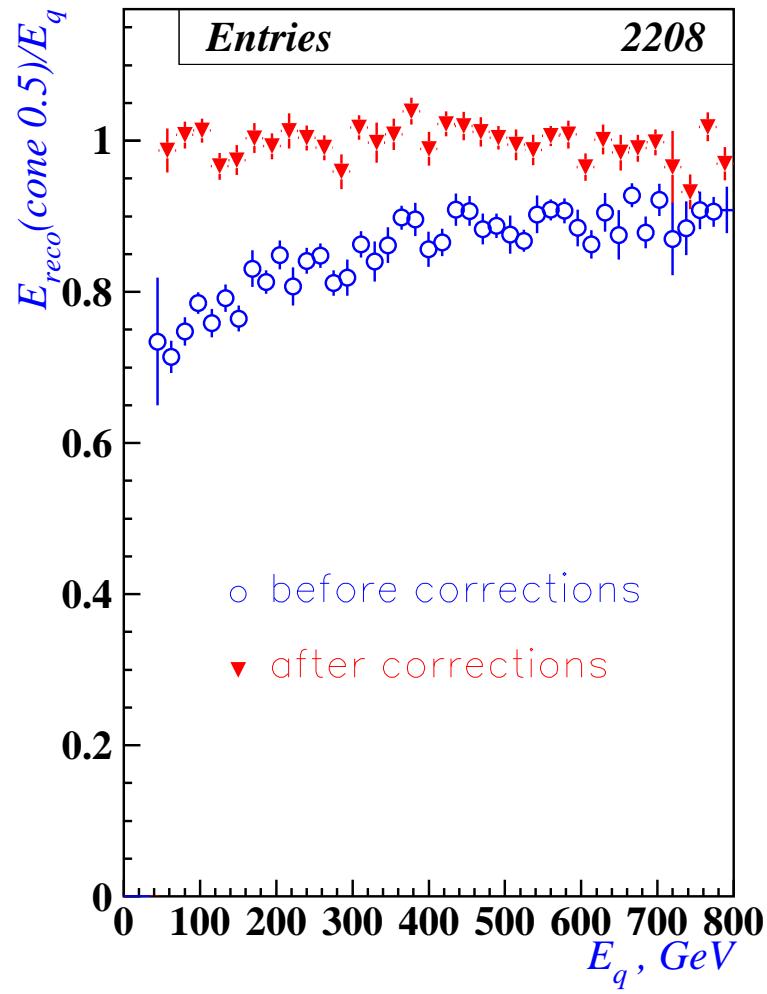
Higgs mass reconstruction in  
 $qq \rightarrow qqH, H \rightarrow \tau\tau$   
with quark energy corrections.

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The task was to improve the Higgs mass resolution and reconstruction efficiency in the channel  $qq \rightarrow qqH$ ,  $H \rightarrow \tau\tau \rightarrow ej$ , for  $M_H = 135$  GeV.

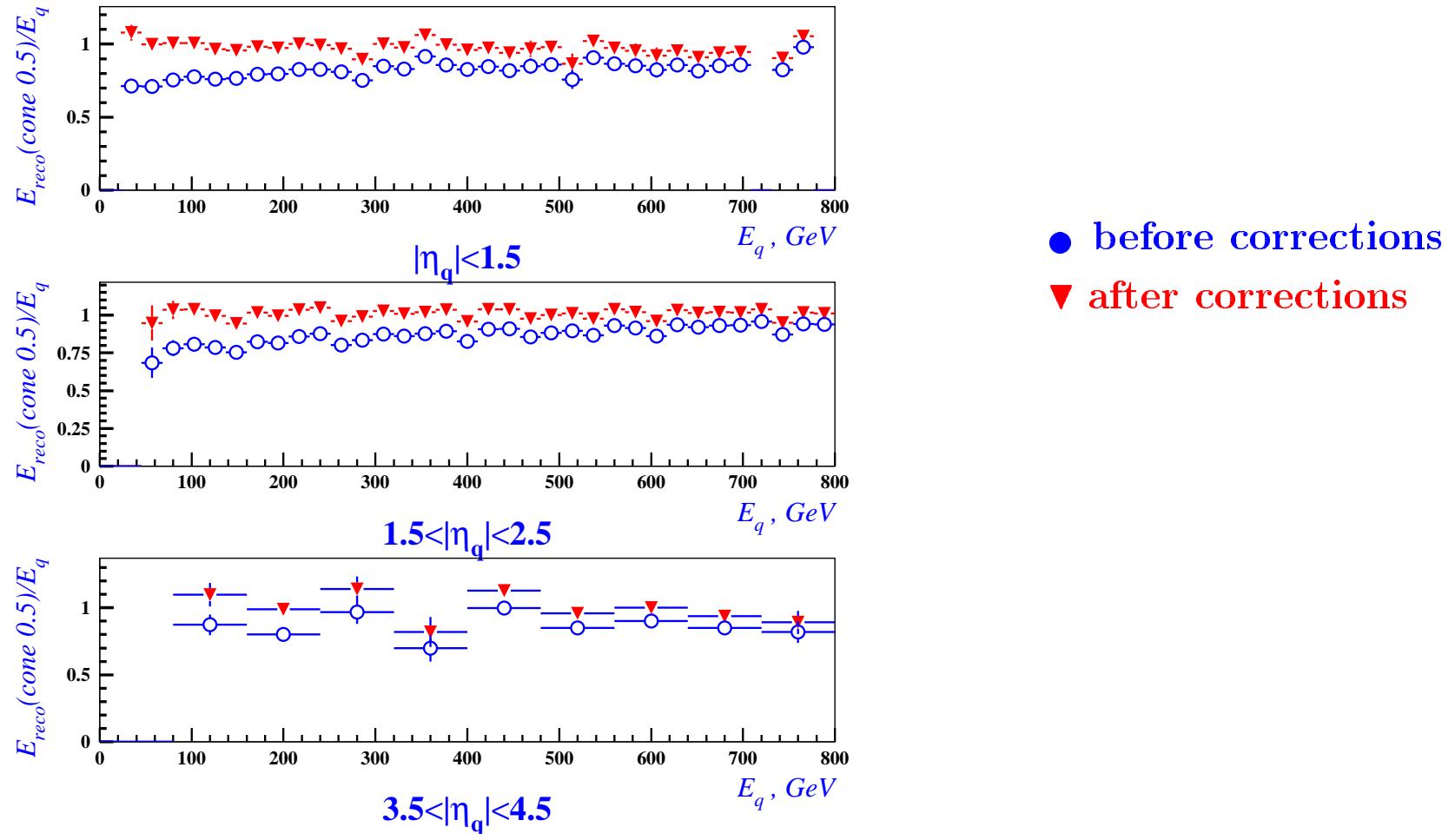
Corrections for tagging jets energy have been determined: reconstruction energy  $E_{reco}$  as a function of generated quark energy  $E_q$  was fitted using a second-order polynomial.

## Jet energy scale before and after corrections

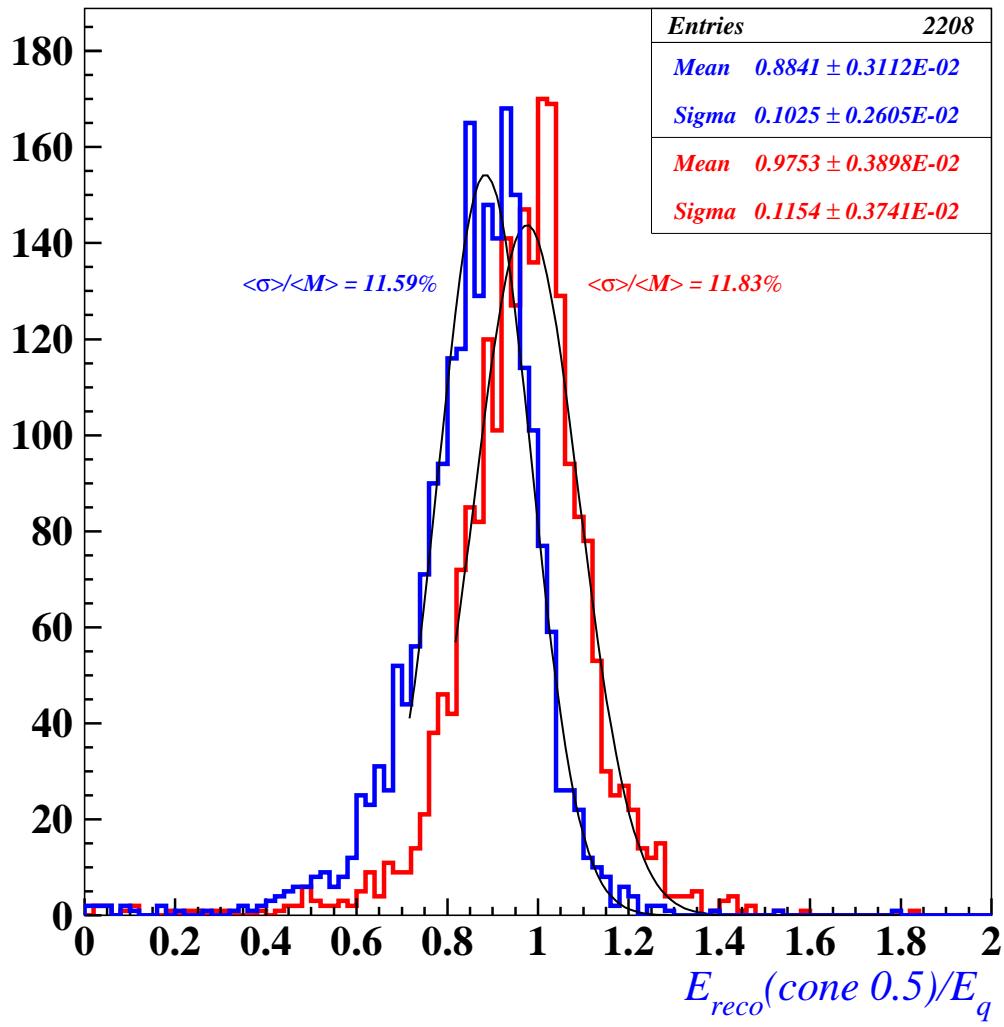


(3)

## Jet energy scale before and after corrections *vs* jet rapidity



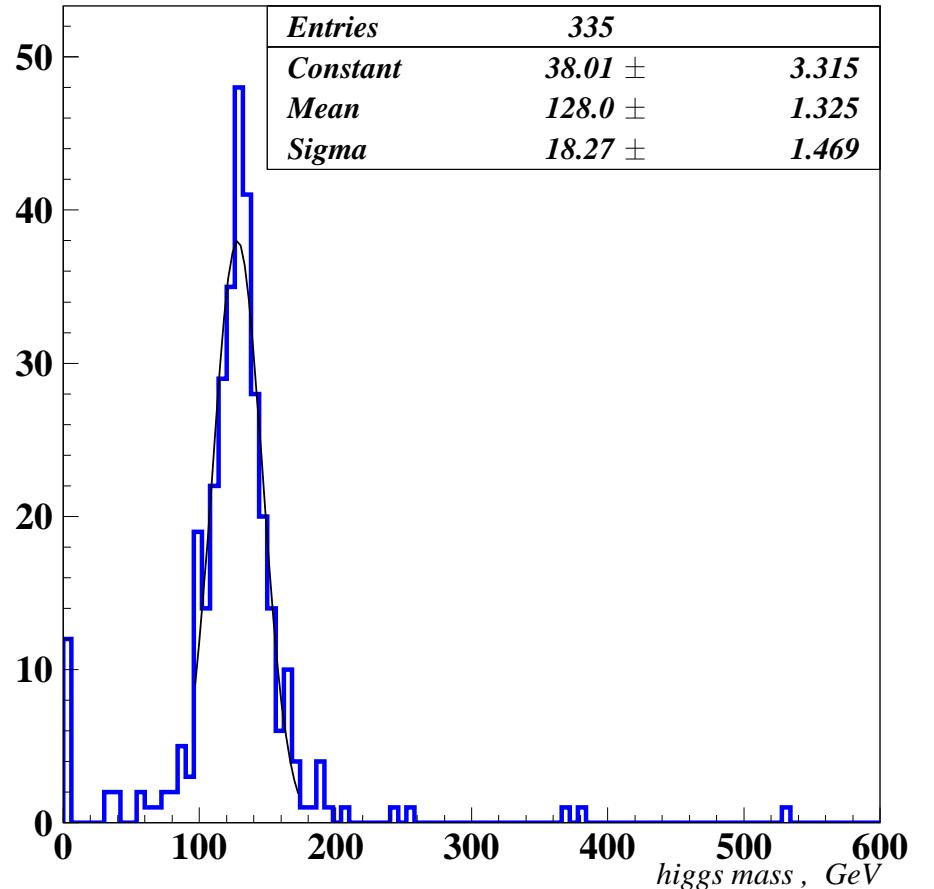
## Peak position



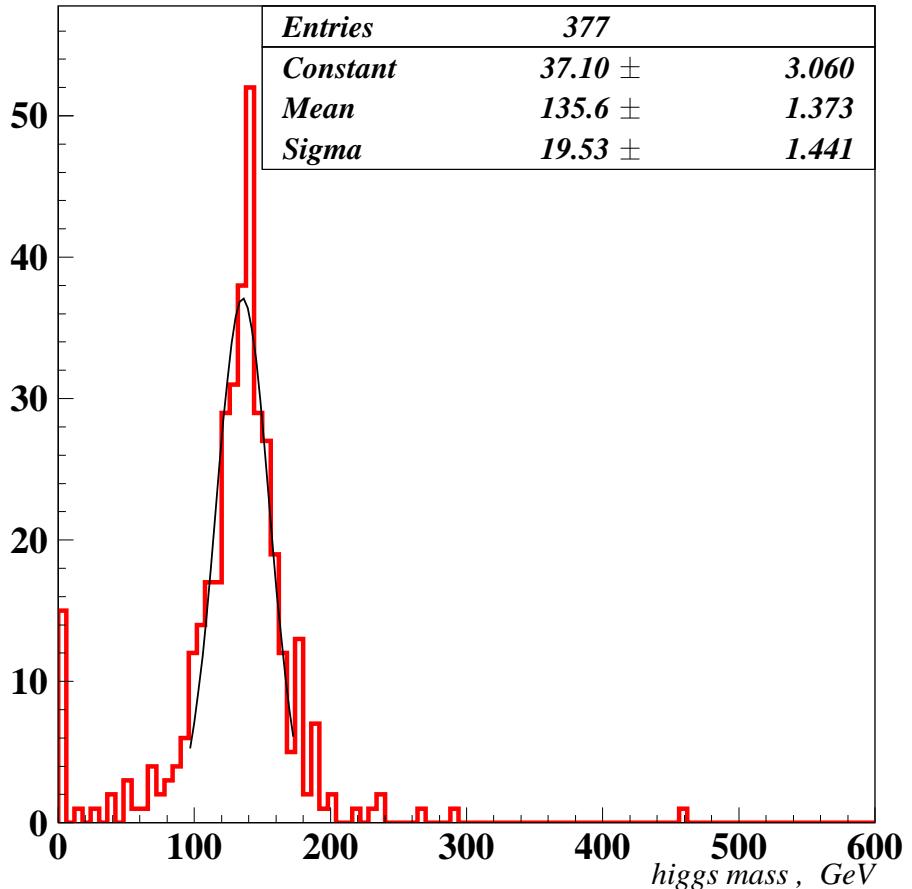
before corrections

after corrections

## No corrections



## Corrected MET and jets (except lepton's towers)



$E_t > 30 \text{ GeV}, M_{jj} > 1 \text{ TeV} , \Delta\eta > 4.4$

	<b>no corrections</b>	<b>MET from <math>p_t^l, p_t^{\tau-jet}</math> + non corrected tagging jets</b>	<b>MET from <math>p_t^l, p_t^{\tau-jet}</math> + corrected tagging jets</b>	<b>corrected MET and jets * (except lepton's towers)</b>	<b>corrected MET and jets ** (except lepton's towers)</b>
$< M_H >, \text{ GeV}$	128.0	122.9	126.2	145.5	135.6
$< \sigma >, \text{ GeV}$	18.27	18.86	21.98	22.46	19.53
$< \sigma > / < M_H >, \%$	14.27	15.34	17.41	15.44	14.40

\* jets and out of cone towers corrected with Silvia's corrections

\*\* jets corrected with new corrections and out of cone towers corrected with 30 GeV jet energy correction (Silvia's corrections) - CMS IN 2001/001

## Conclusion

New jet energy corrections give us better Higgs mass position,  
but doesn't improve the mass resolution.

The next step is to include tracks to improve mass resolution.