Z'(120) and Jet Finding

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Fermilab

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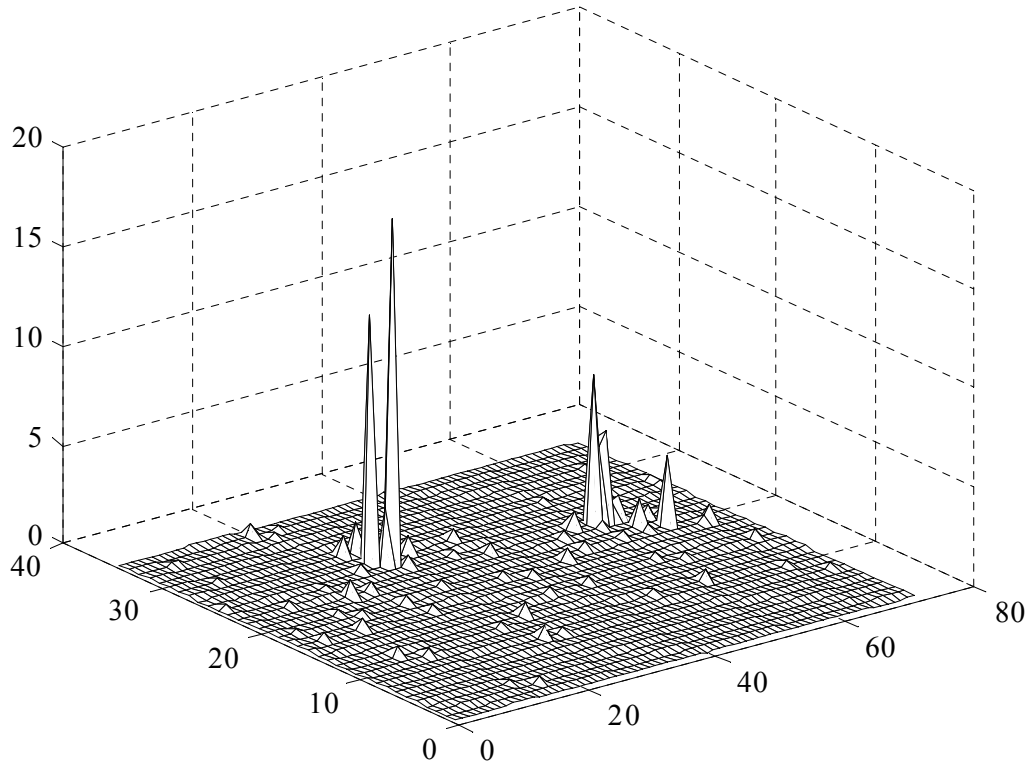
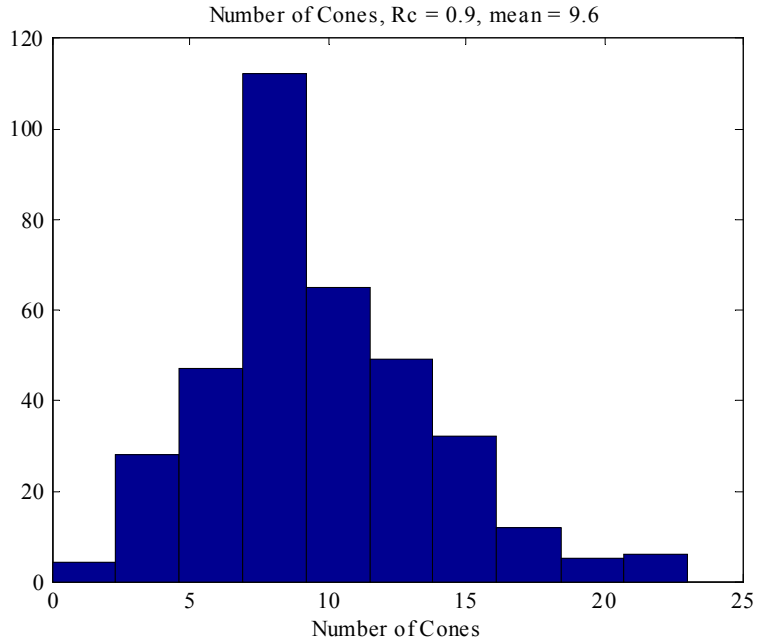
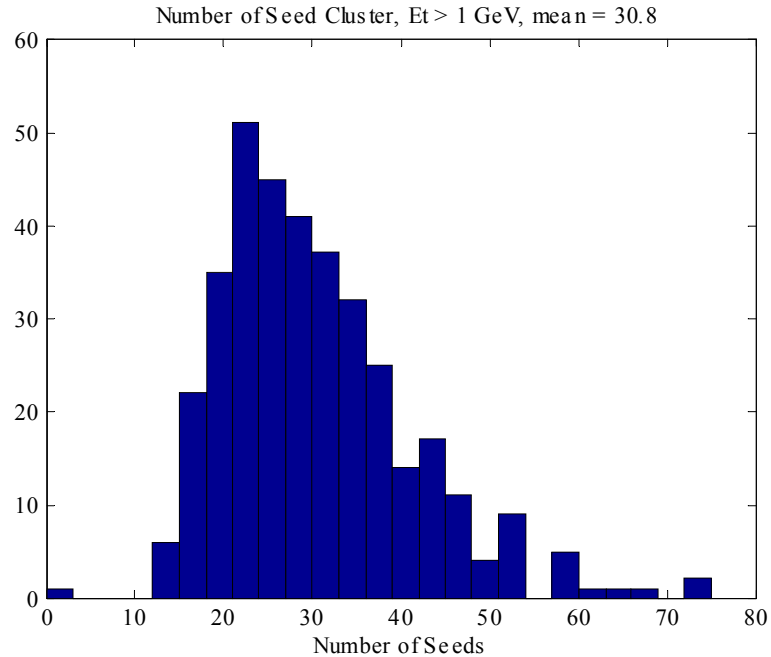
HB



20 seeds > 1 GeV. 8 cones, R = 0.9, 8 jets, Rsep = 0.9. 27, 19 clusters (Et > 0.5 GeV in 2 highest Et jets). Find all seeds, then attach all clusters to cones, Rc, centered on seeds. Finally merge cones within Rsep. Etj1 = 49 GeV, Etj2 = 37.9 GeV, Mjj = 85 GeV

Seeds, Clusters, Cones





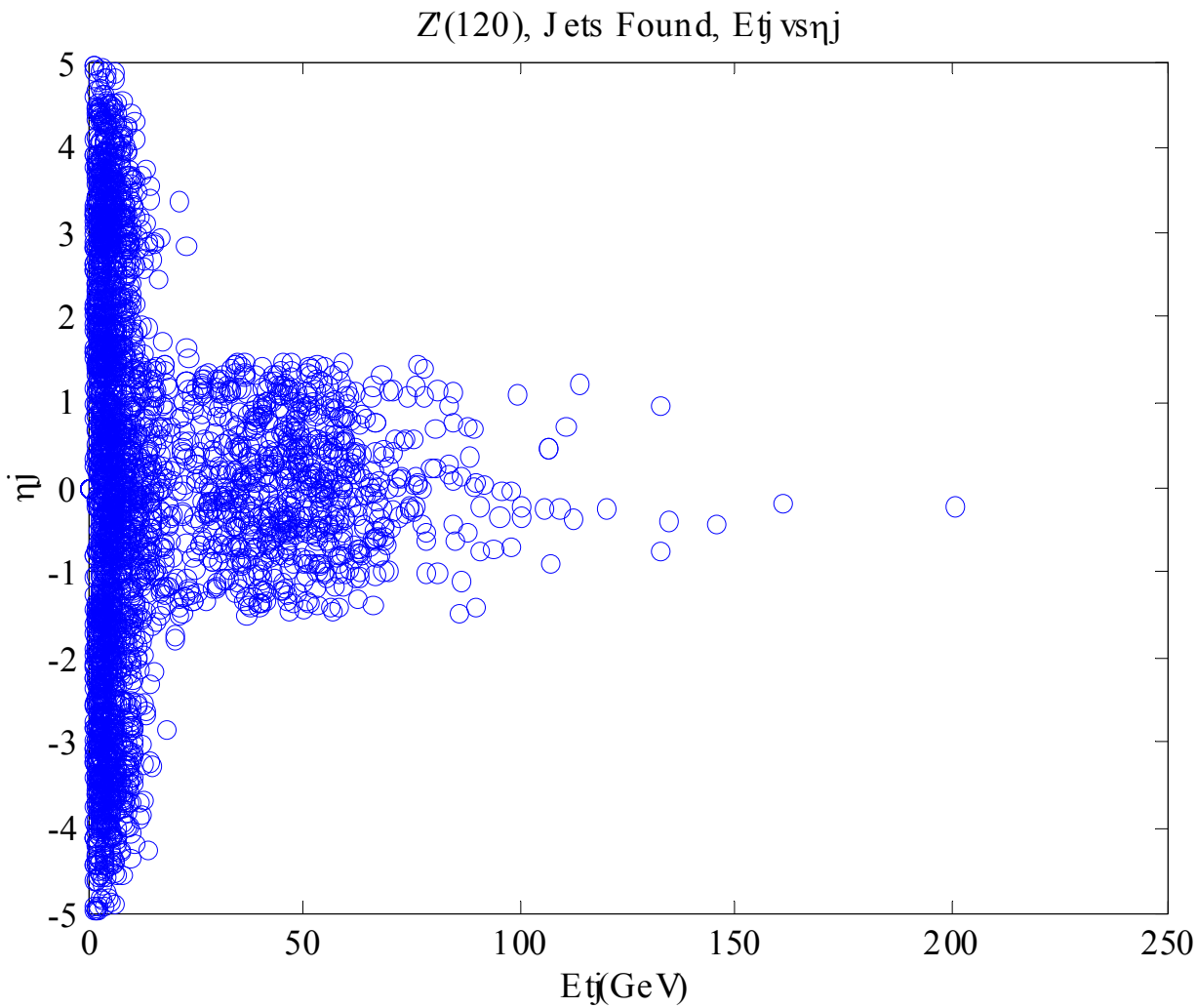
<Ns> = 30.8/event

<Nc> = 9.6/event

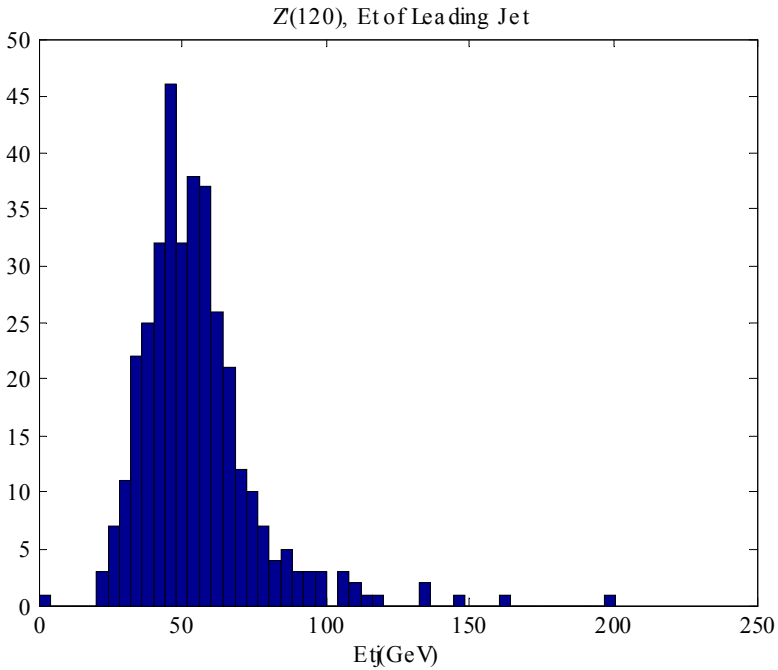
<Nj> = 9.3/event

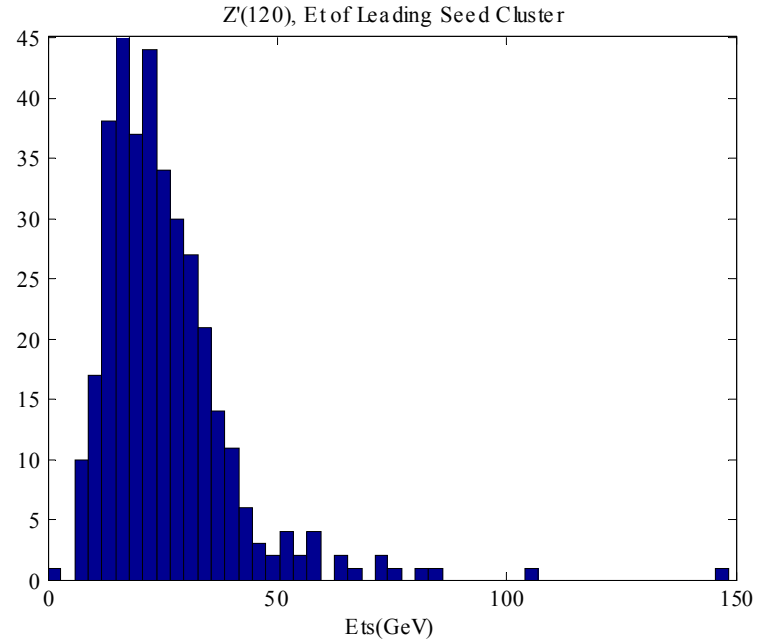
Ets> 1.0 GeV, Etc > 0.25 GeV, Rc = 0.9, Rsep = 0.9

L1 Trigger in HB



Leading Jet



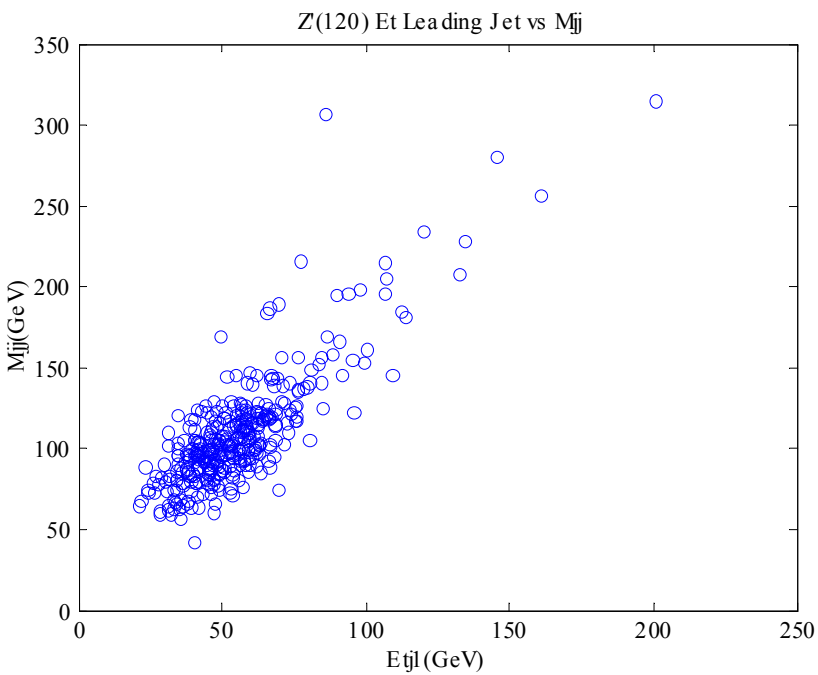


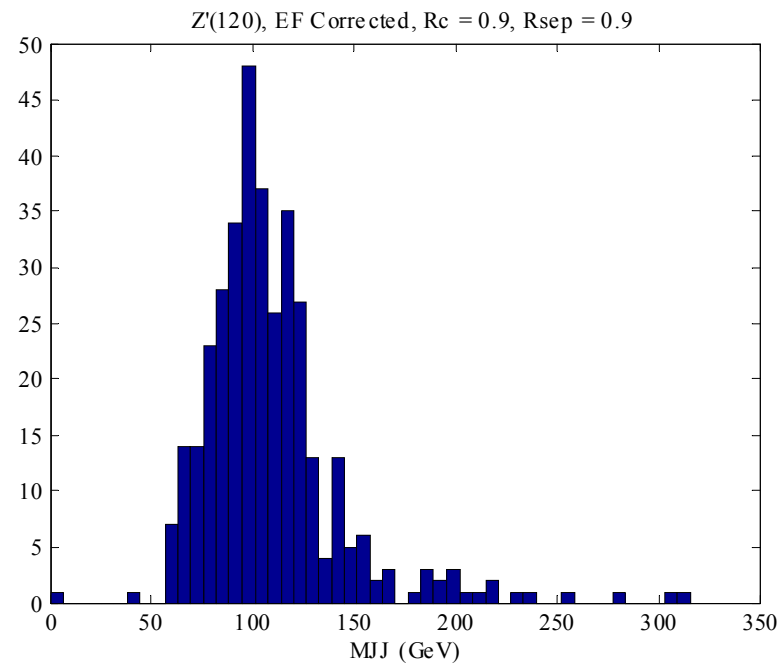
<Ns>j1 = 21 = # clusters in lead jet

<Et>sj1 = 25.0 GeV = Et of seed cluster in lead jet

<Et>j1 = 55 GeV (45.0 GeV for j2)

Dijet Mass – vs Etj1?



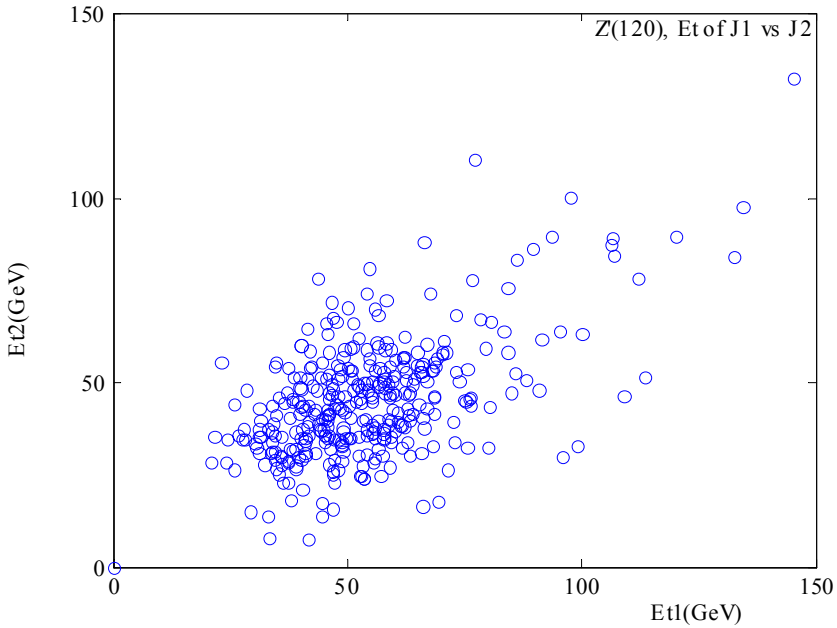


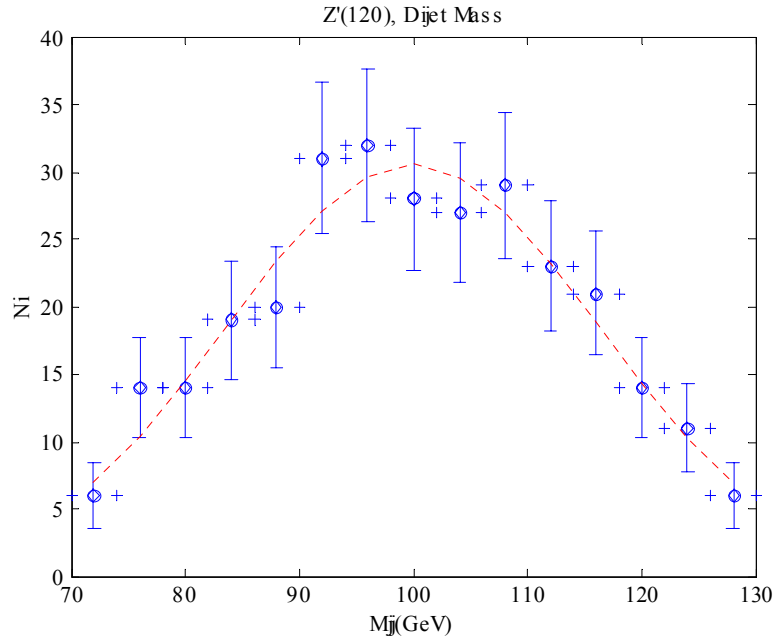
Correct Mjj for Etj1 – why? (e/pi, calib?)

Cut on Etj1 < 80 GeV

<Mjj> = 101.2 GeV, sigma(Mjj) = 18.72 GeV

Mass Resolution





~ symmetric decays Etj1 ~ Etj2

Gaussian fit: chisq/dof = 3.4/12

Mean = 99.94 +- 1.13

Sigma = 16.28 +- 1.18

Low L

- No major changes at low L, although the clusering and merging does improve Mjj slightly.

- Expect more issues at full design luminosity. Need to “subtract” pileup?