Looking at new variable to attack QCD

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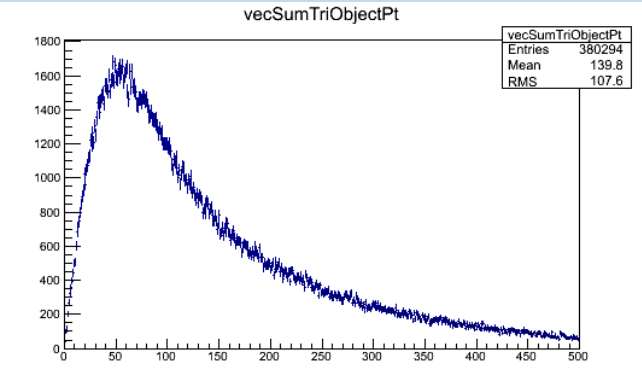
Strategy

- Trying to find variables combining the dijet and MET information to further suppress QCD, currently looking at:
  - Vectorial sum of Dijet and MET pT
    - Should be “zero” to events where dijet and MET are the only products from the primary interaction
  - Scalar sum of Dijet and MET
    - Should be high for signal
    - Can be used in conjunction with other variables (like with alphaT)
  - Dijet pT over Total pT (dijet+MET)
    - Should peck at 0.5 for signal
    - Very similar to alphaT can be re-written to have same behavior (sharp fall at 0.5) and can be made better with cut in HT+MET
    - Talked with alphaT people the have some data driven method to estimate QCD contamination using HT bins which we could adapt.

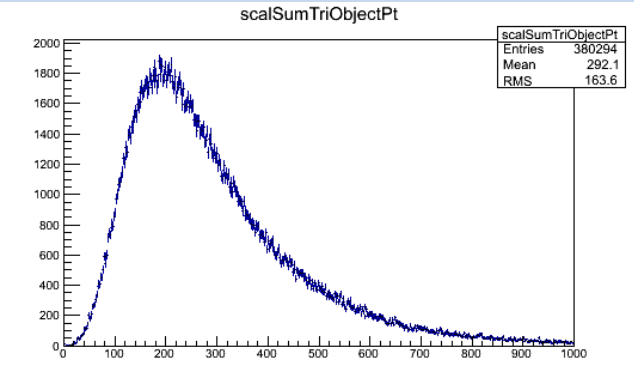
After Trigger Selection

Q CD

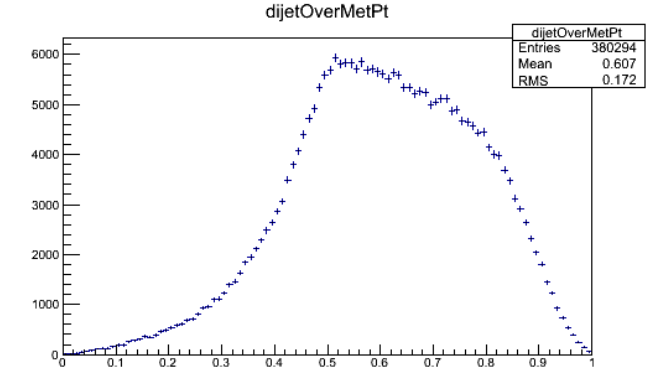
Vector Sum

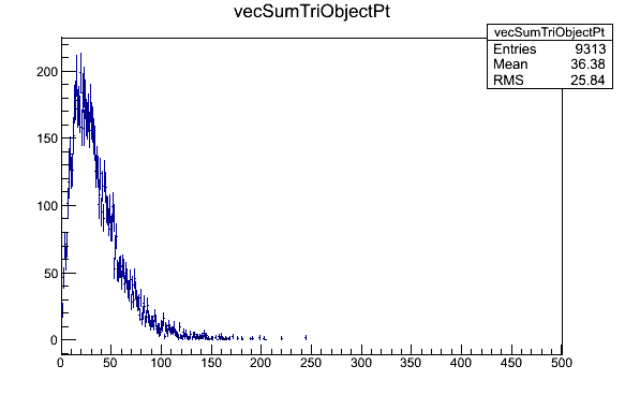


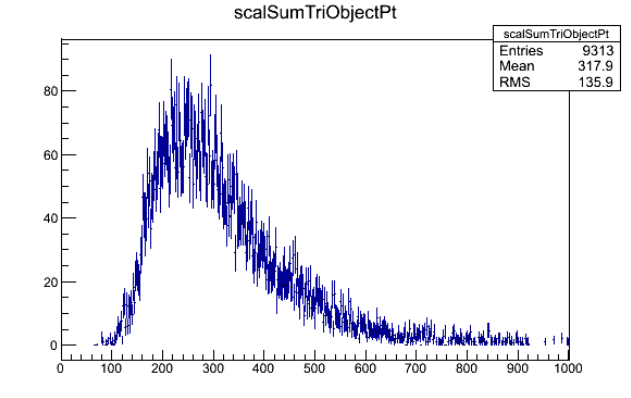
Scalar Sum

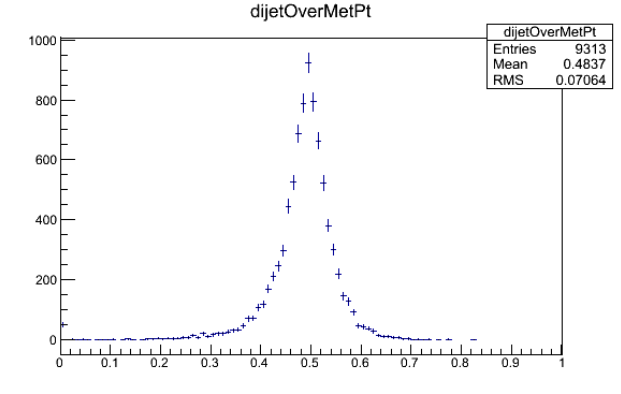


Dijet pT fraction







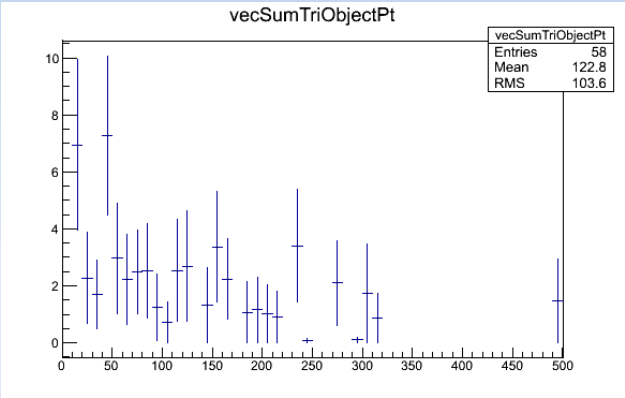


VBF Inv 120

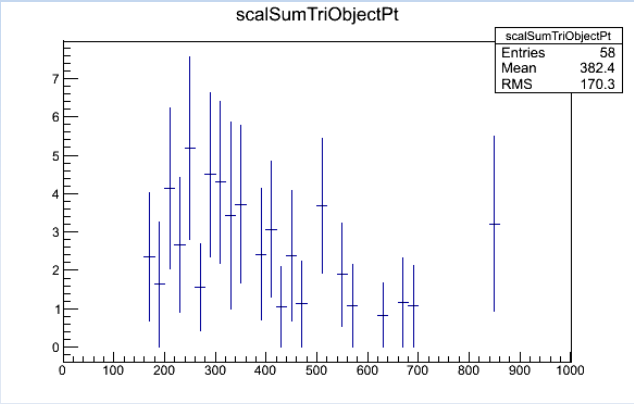
After Mjj>1200

Q CD

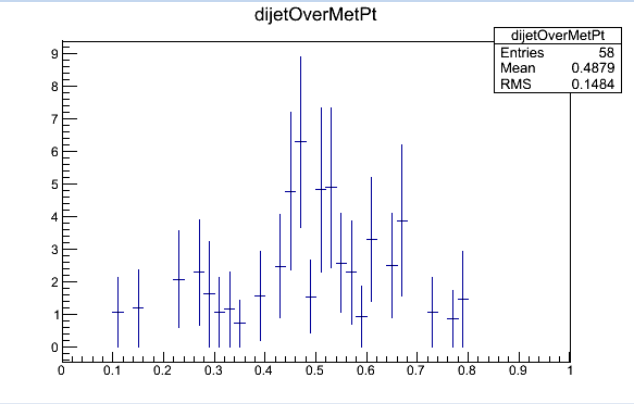
Vector Sum

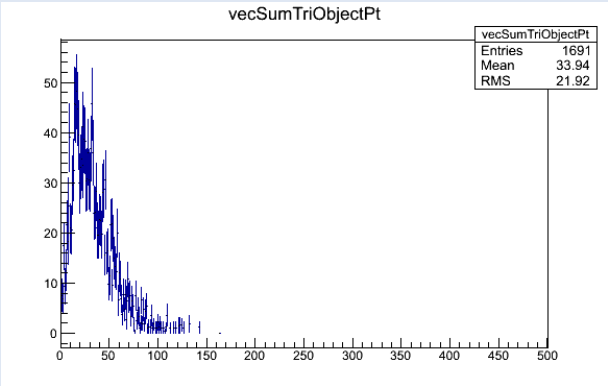


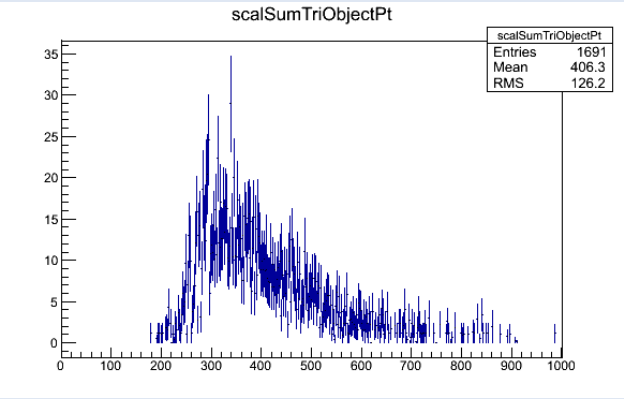
Scalar Sum

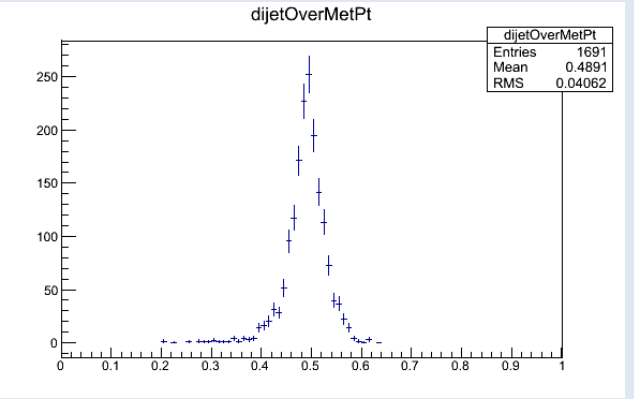


Dijet pT fraction







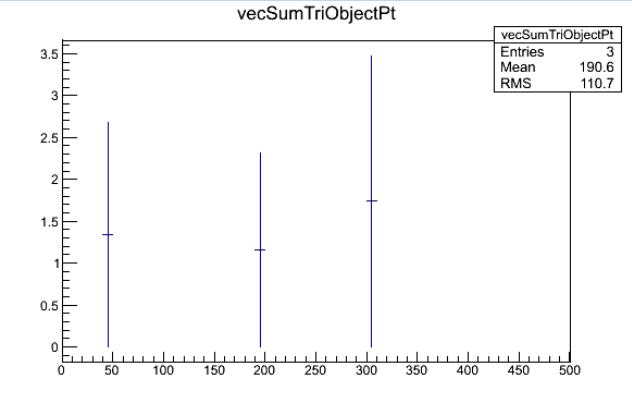


VBF Inv 120

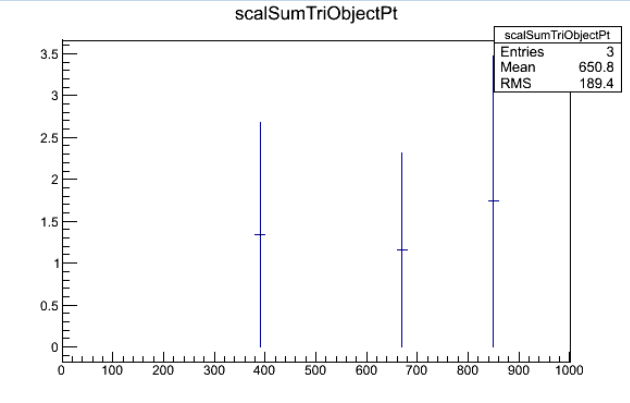
After Delta(phi)<1.0

Q CD

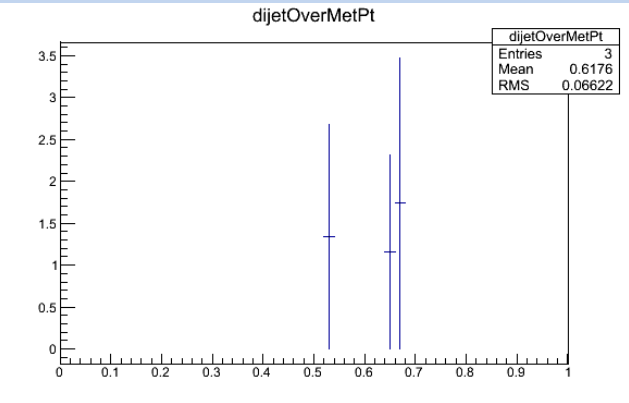
Vector Sum

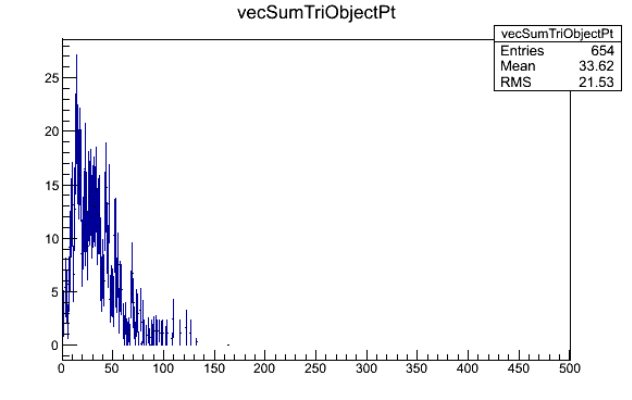


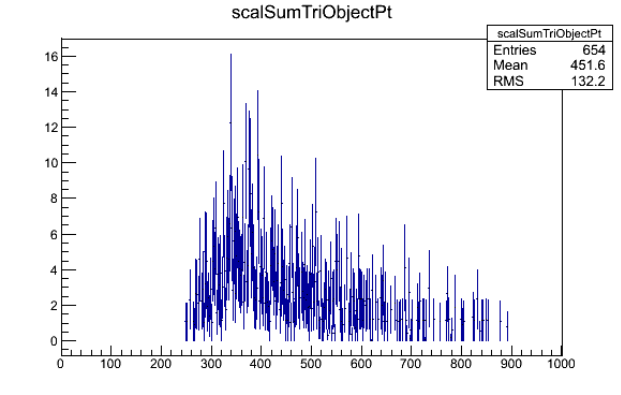
Scalar Sum

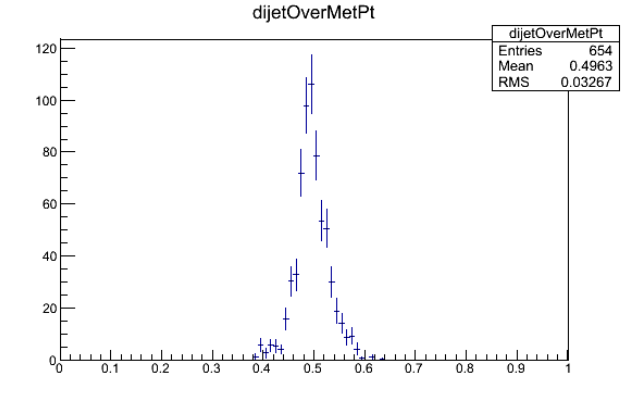


Dijet pT fraction









VBF Inv 120