

Issues on Zbb dataset

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Issue with Zbb dataset

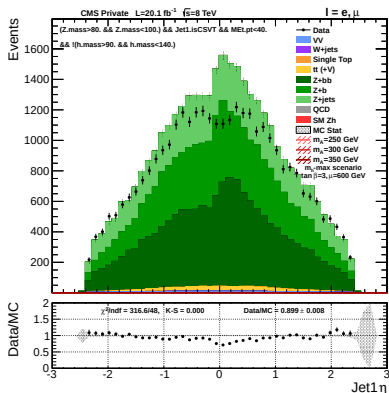
- Investigating some problem in a control region for $A \rightarrow Zh \rightarrow \ell\ell b\bar{b}$ analysis, we found strange distribution for Zbb dataset.

- DatasetPath:

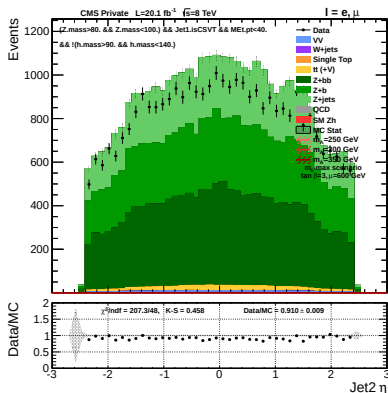
`/ZbbToLL_massive_M-50_TuneZ2star_8TeV-madgraph-pythia6_tauola/Summer12_DR53X-PU_S10_START53_V7A-v1/AODSIM`

- Strange peak-like distribution for $\eta \sim 0.2$ of the leading jet at Reco Level;
- Same peak for leading b-parton at GenParticle level
- Sub-leading jet or parton looks fine.
- Any idea?

η of the RecoJet with highest CSV b-tagging in the event



η of the RecoJet with second highest CSV b-tagging in the event



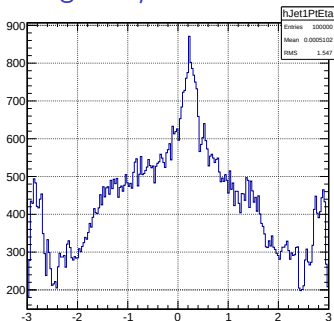
Where we spot the issue. The background comprises many different datasets, but the only one with this asymmetry is the Zbb one. Other DYJets dataset (Z+jets and Z+b) does not show any asymmetry.

Leading and sub-leading (in Pt) jets for Zbb dataset

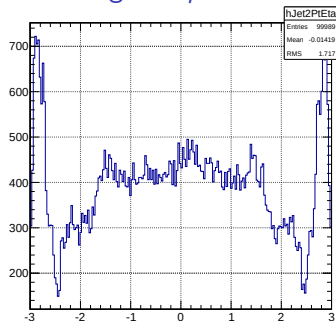
Look only at Zbb dataset. RecoJets are: AK5 PFJets

Only requirement is Trigger (DoubleMu17+8 or DoubleEle17+8).

Leading Jet η



SubLeading Jet η



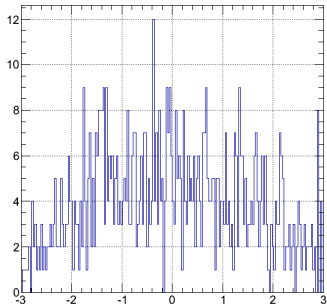
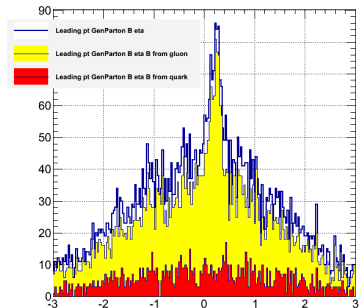
GenParticle B from Zbb dataset

Only Zbb dataset: GenParticle level

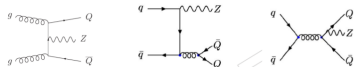
Only requirement is Trigger (DoubleMu17+8 or DoubleEle17+8).

Leading B parton η

Sub-Leading B parton η



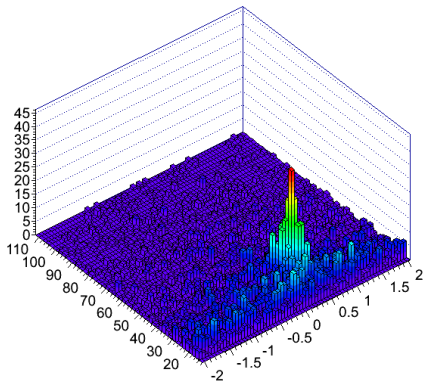
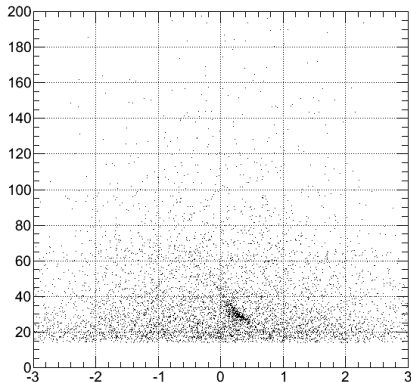
Shown separately for
 $gg \rightarrow Zbb$ and $qq \rightarrow Zbb$



GenParticle B from Zbb dataset

Only Zbb dataset: GenParticle level

selection: $p_T > 15 \text{ GeV}$, $|pdgId| == 5$ and $status == 3$ (and trigger)



GenParton Pt vs Eta

A clear structure at $0 < \eta < 0.5$ and $25 < p_T < 35 \text{ GeV}$. What is that?