Muon Collider Full Simulation Studies

Shivani Lomte

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Jet substructure to reduce fake jets
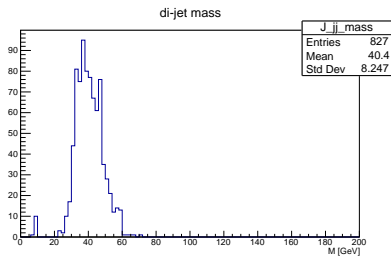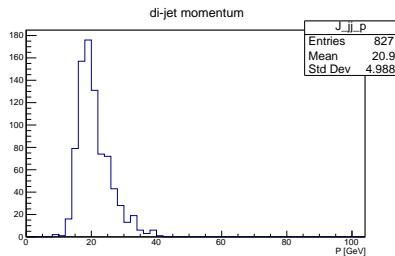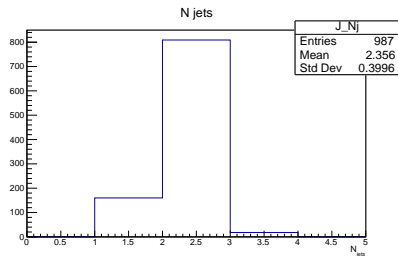
Signal process: $\mu^+\mu^- \to \nu\bar{\nu}H, H \to b\bar{b}$ at $\sqrt{s}$=1.5 TeV
with BIB overlaid at 1.5 TeV.

- Jets clustered with anti-kt algorithm with cone size of 0.5
- Jet daughter particles also stored

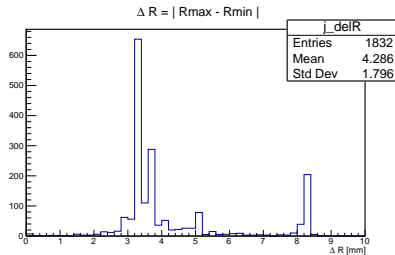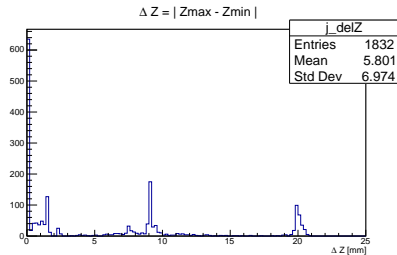*Currently, using mumu2H2bb750.stdhep file on snowmass machine. Need to private produce?
*IMCC report and other studies have used kt-algorithm for jet clustering.
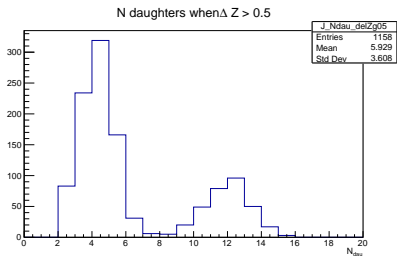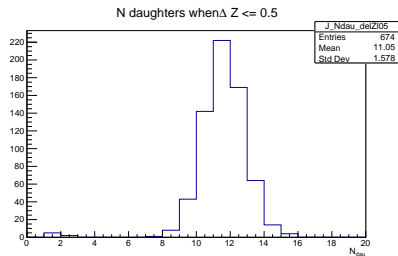
Jet kinematics w/o BIB

- di-jet mass far from 125 GeV

Jet substructure w/o BIB

Jet substructure w/o BIB

- transverse jets seem to have larger N daughter particles!

Next steps

- generate private sim sample?
Currently, using mumu2H2bb750.stdhep file on snowmass machine.
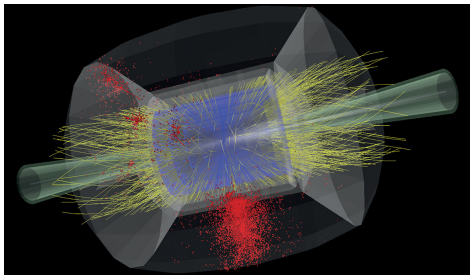
Backup: Origin of fake jets

Figure: Simulation of $H \to b\bar{b}$ in presence of BIB. Credit: D Lucchesi et al