# Validation of FCal Simulation for Run 3

Christian Kirfel

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UNIVERSITÄT BONN

# Introduction - Samples

- Geant4 - G4, full simulation of interaction of particles with matter
- Geant4 - G4 with frozen shower, full simulation using a library for standard showers in the forward region
- AF, Atlas Fast Simulation approximating showers.

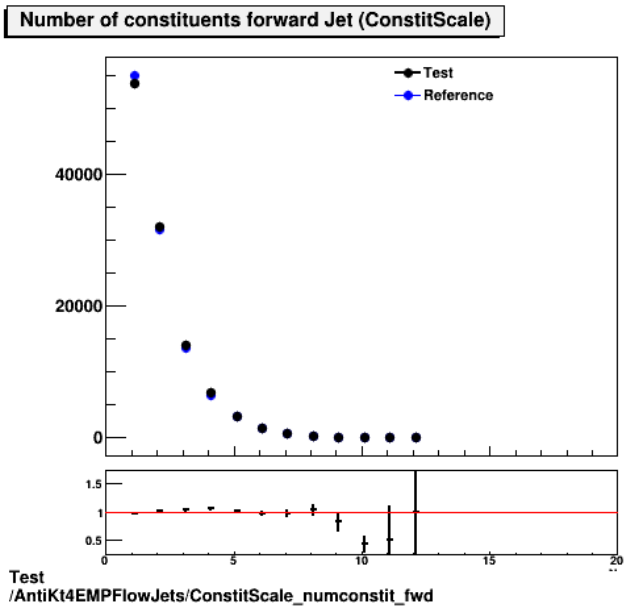
# Introduction - Features

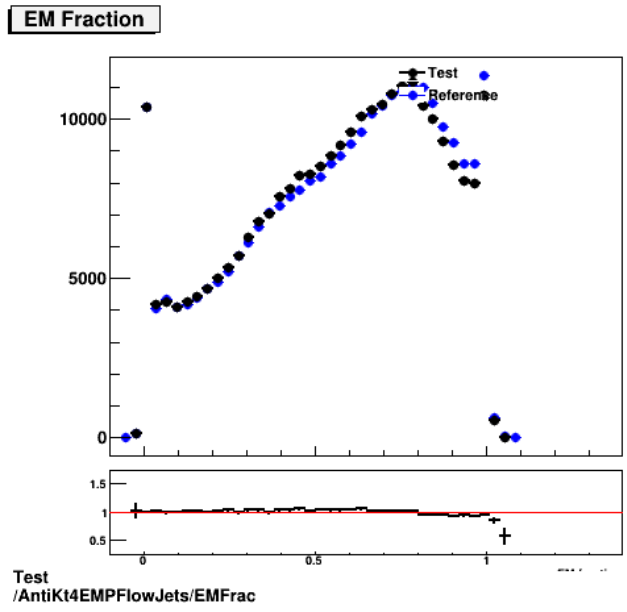
- Forward region: $3.1 < |\eta| < 4.9$
- Standard kinematic features for the forward region at EMScale and ConstitScale
- Plotting kinematics in additional eta and pt bins
- Number of constituents in the forward region at EMScale and ConstitScale
- Energy response in the forward region
- Average number of jets
- +standard plots for jet validation

# Introduction - Comparisons

- Comparisons produced using the usual scripts for jet validation.
- Comparison of G4 to G4 with frozen shower: Plots
- Comparison of AF to G4 with frozen shower: Plots
- Comparison of AF to G4 without frozen shower: Plots

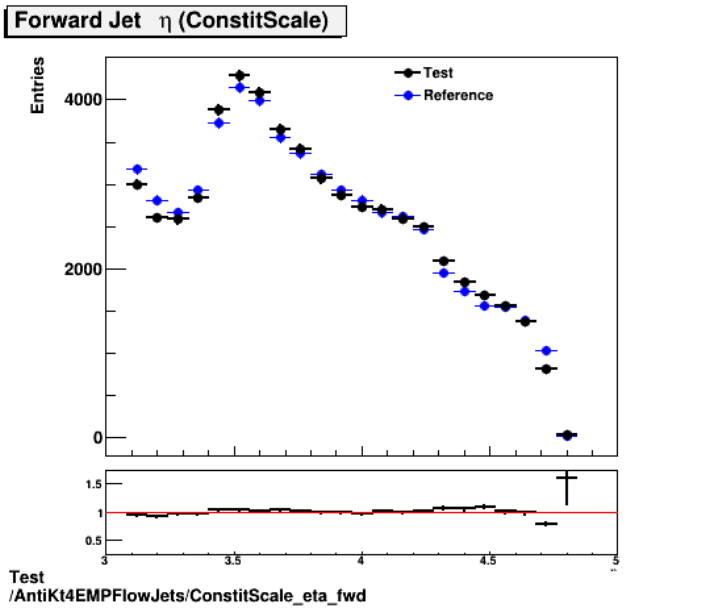
# G4 to G4 with frozen shower

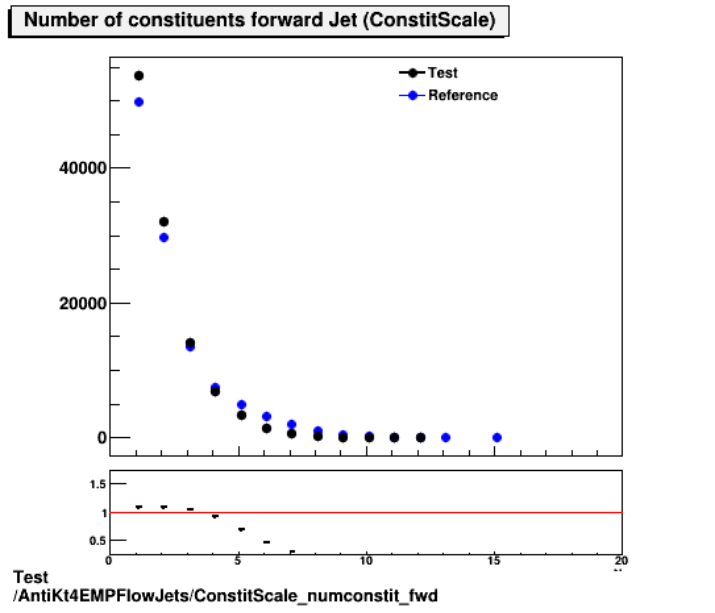



- Good agreement between G4 and G4 without frozen shower
- Number of constituents and kinematics look good
- Shape differences for the EMFrac

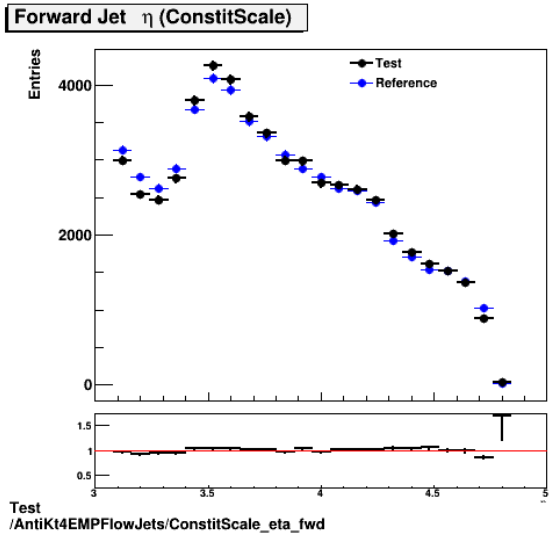
# AF to G4 with frozen shower

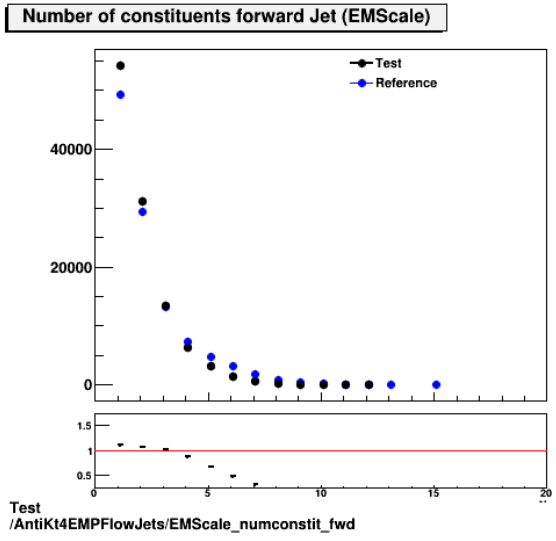


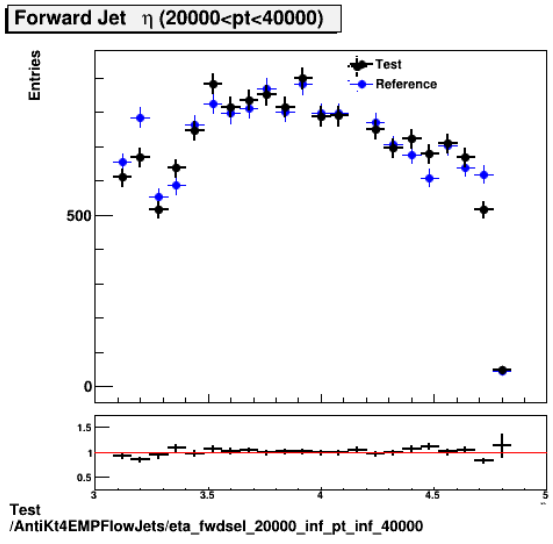



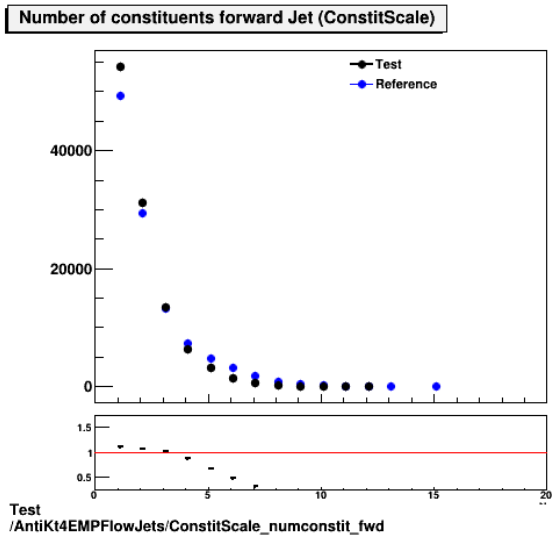

- A few plots are marked red. Nothing shows large disagreements.
- Kinematics have acceptable agreement.

# AF to G4 without frozen shower, red plots

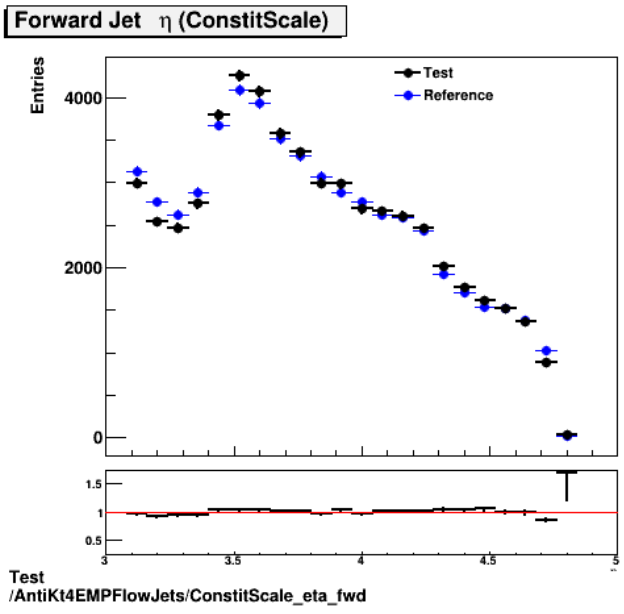


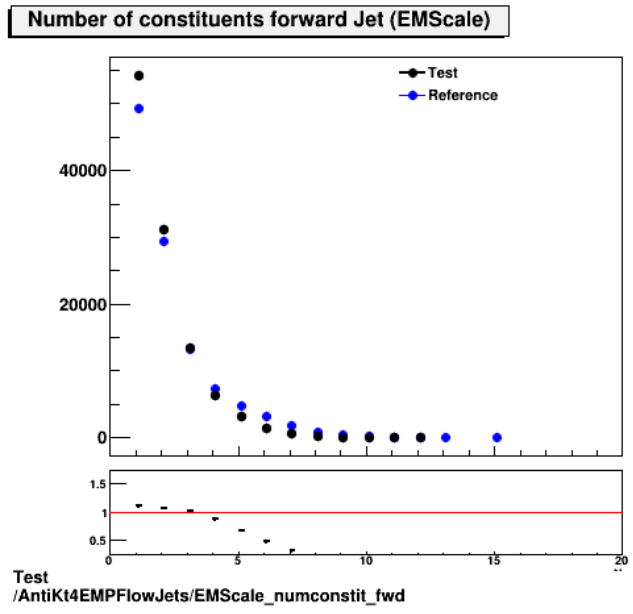



# AF to G4 without frozen shower, decent agreement




- The number of constituents in the forward region is slightly off but the kinematics look ok