

# Validation Details

## Samples:

- RelVal QCD\_30\_50 CMSSW\_1\_6\_10

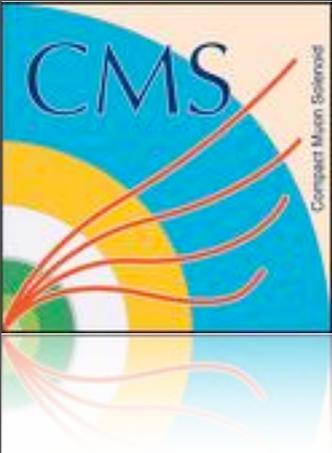
(/RelValQCD\_Pt\_30\_50/CMSSW\_1\_6\_10-RelVal-1204132718/GEN-SIM-DIGI-REC)

- RelVal Fast Sim QCD\_30\_50 CMSSW\_1\_6\_10

/RelValQCD\_Pt\_30\_50/CMSSW\_1\_6\_10-FastSim-1204397633/GEN-SIM-DIGI-RECO

## Procedure:

- PFTester intergrated in the same framework as CaloJet Tester
- Plots monitored jet properties, then performs Kolmogorov test between reference(full) and new data (here FastSim); We do not expect full agreement.



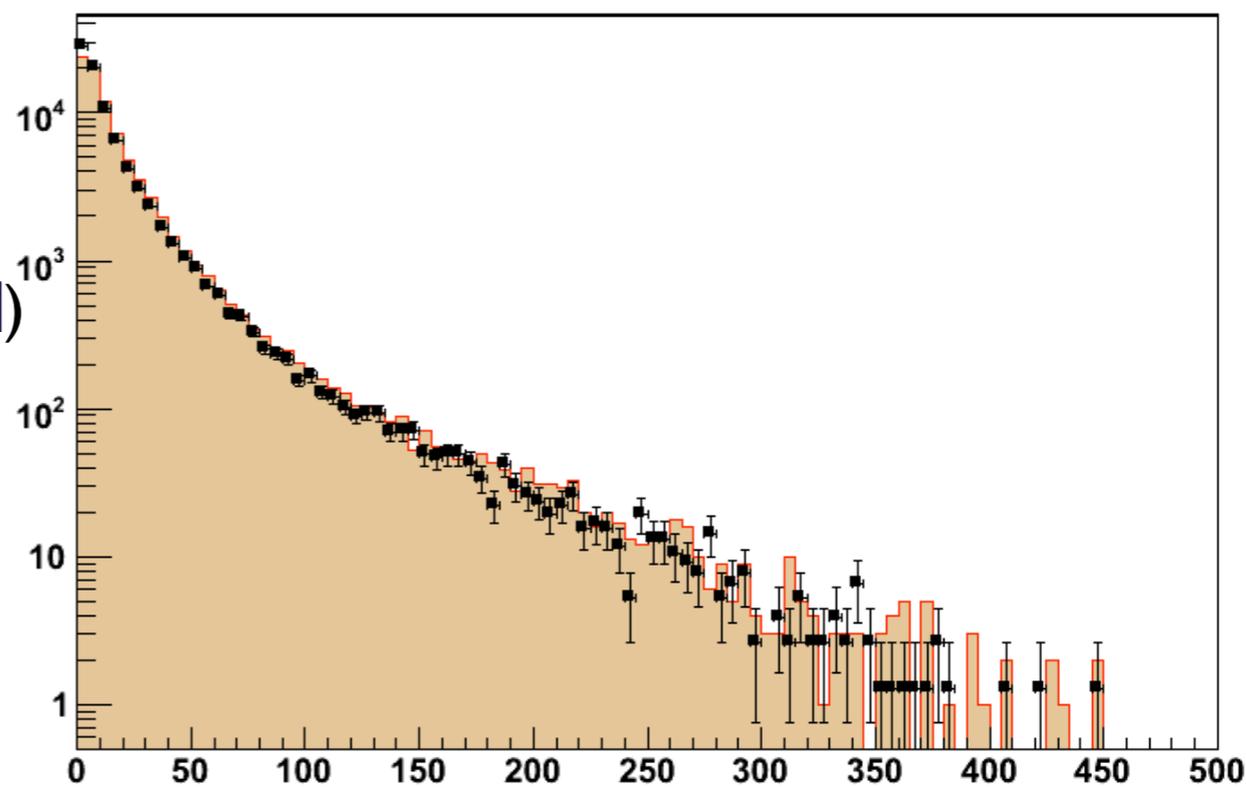
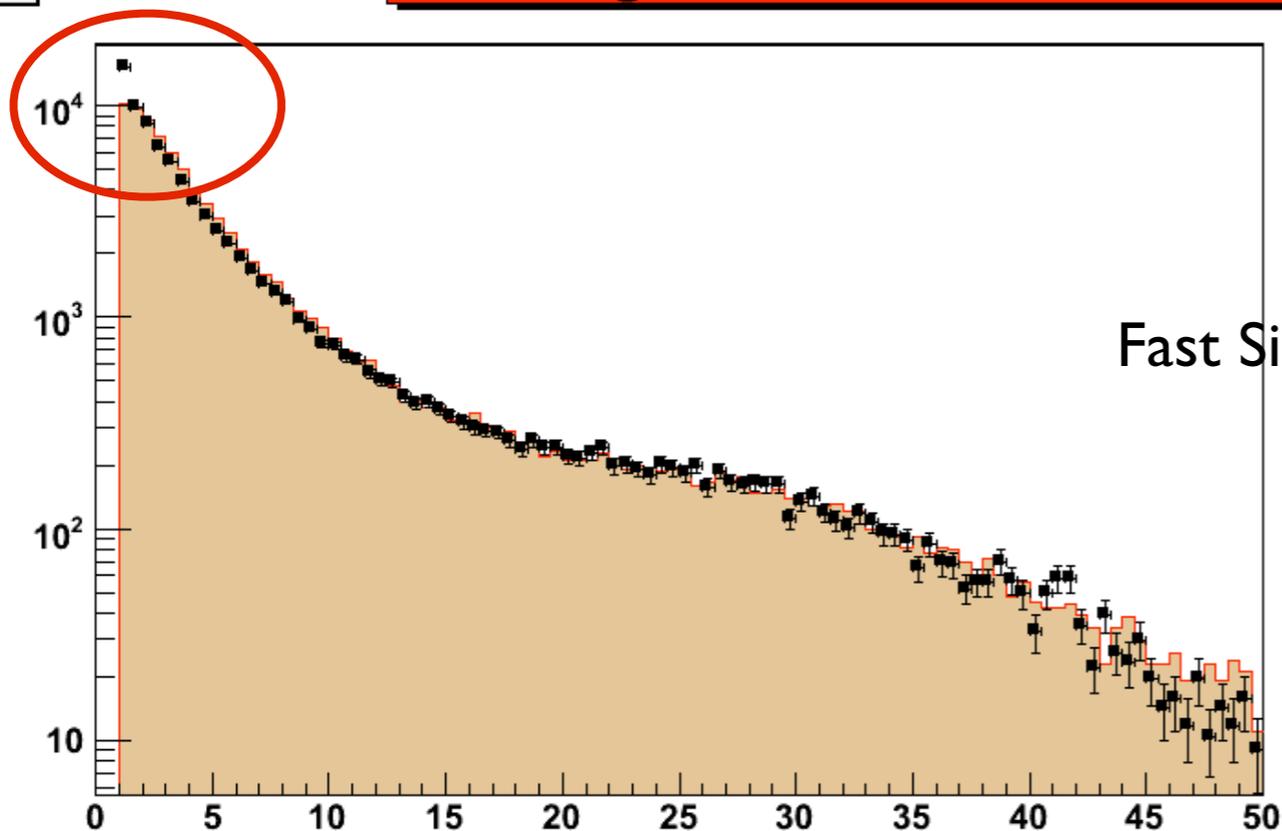
# 1610 Fast vs Full: General Kinematics

Fast/Full  
Kolmogorov Test PV = 0.000000

Fast/Full  
Kolmogorov Test PV = 0.000000

Pt

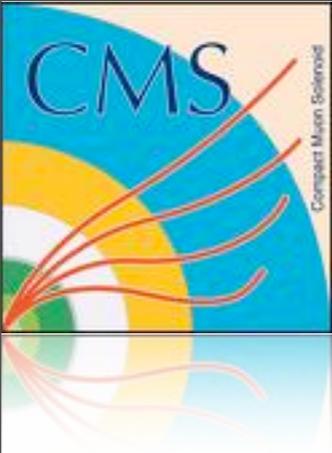
E



$p_T$

$E$

All jets: Good agreement, Fast Sim (■) has more low  
pt jets

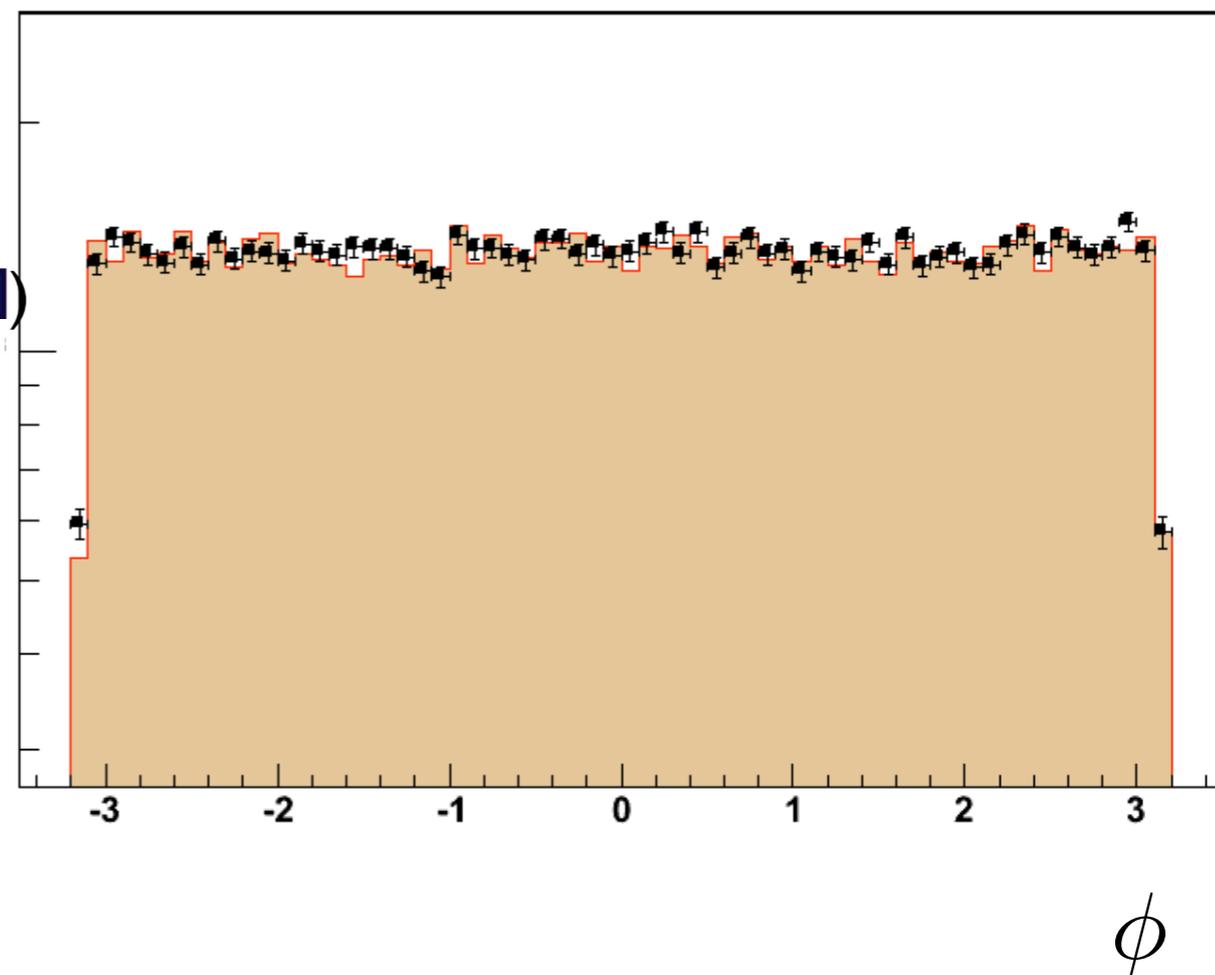
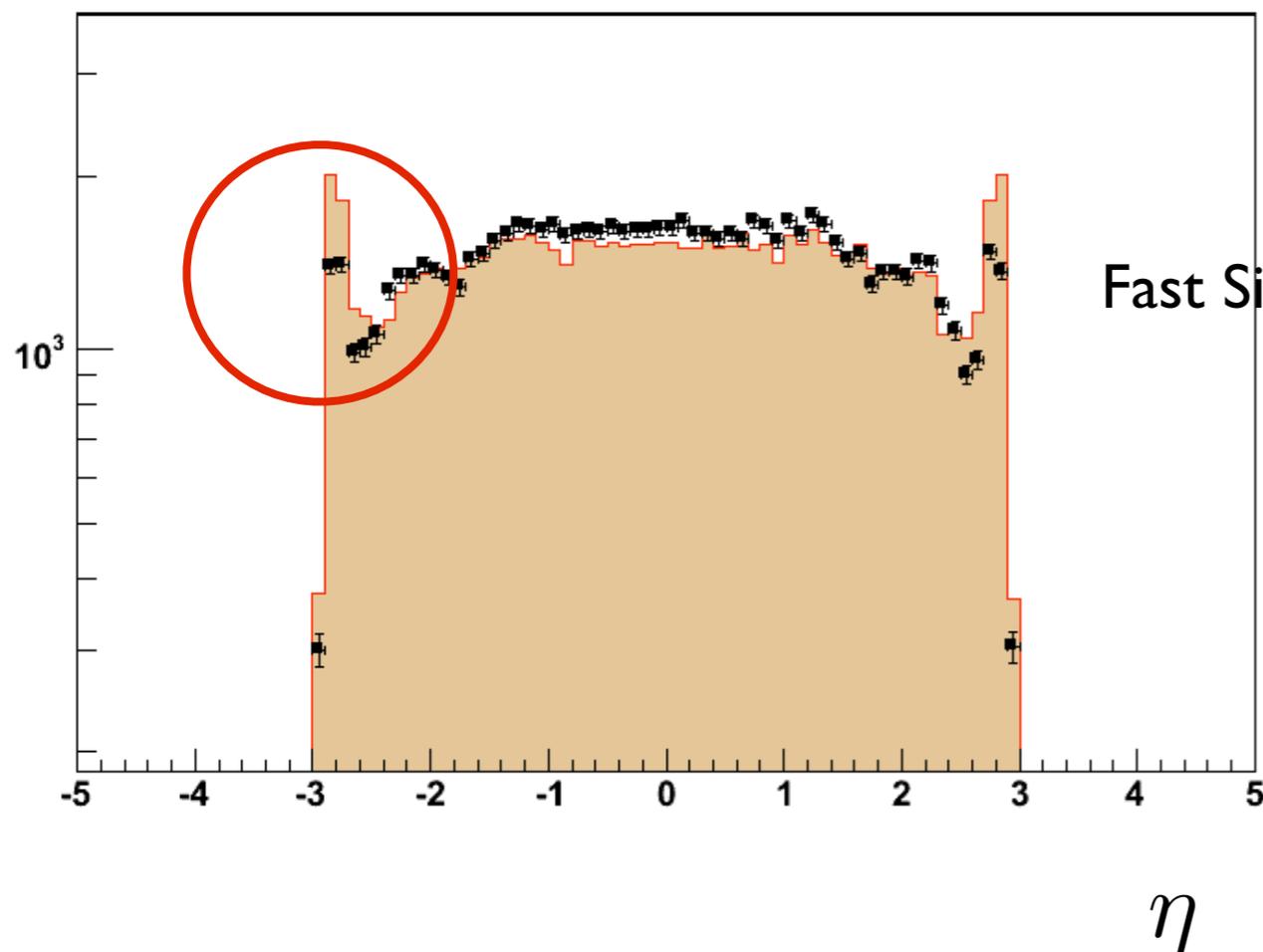


# 1610 Fast vs Full: General Kinematics

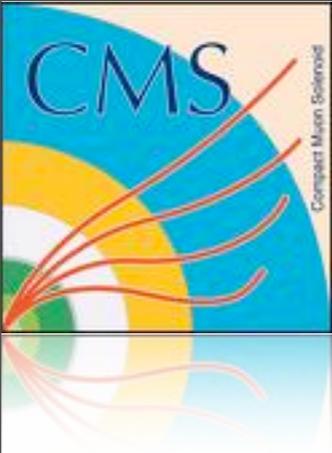
Fast/Full  
Kolmogorov Test PV = 0.000000

Fast/Full  
Kolmogorov Test PV = 0.996697

Eta



All jets: Good agreement, no PFlow in forward region at the moment, differences in that transition region



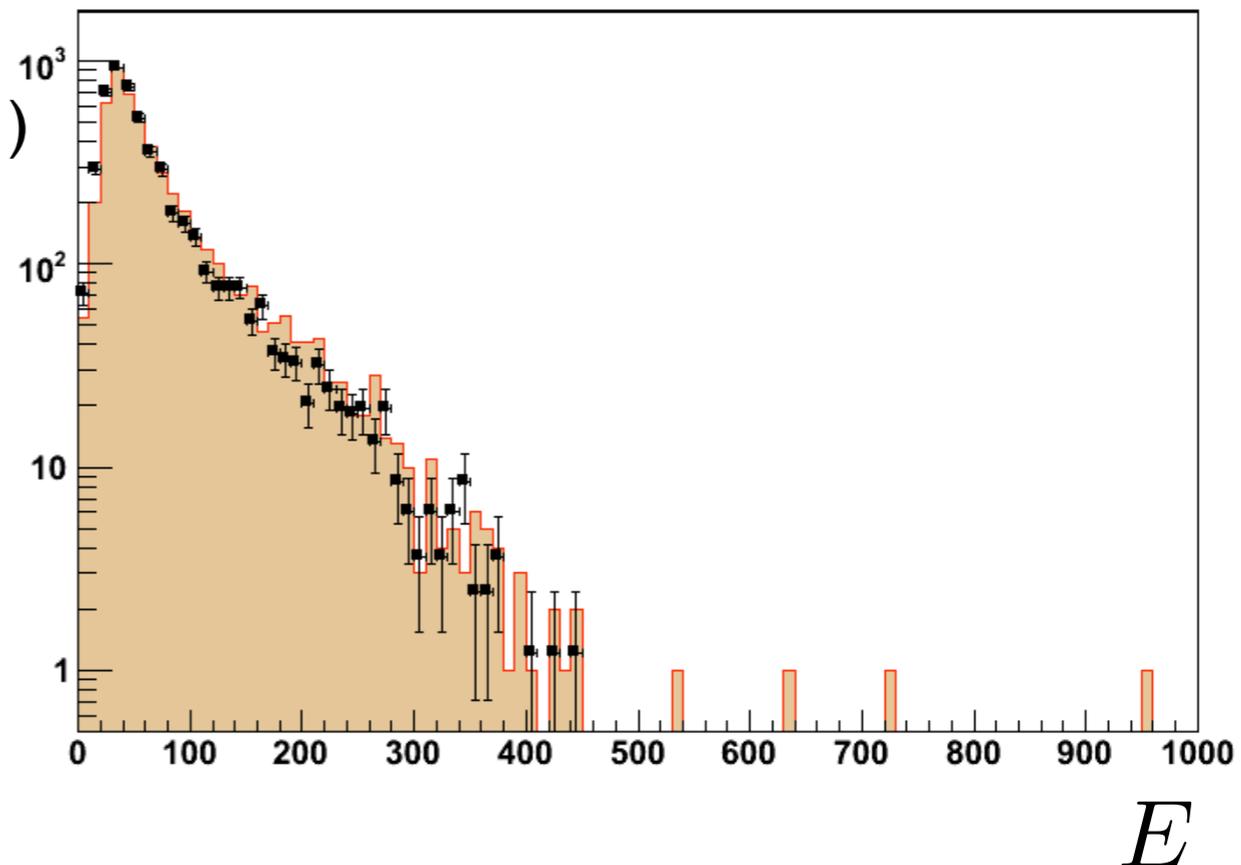
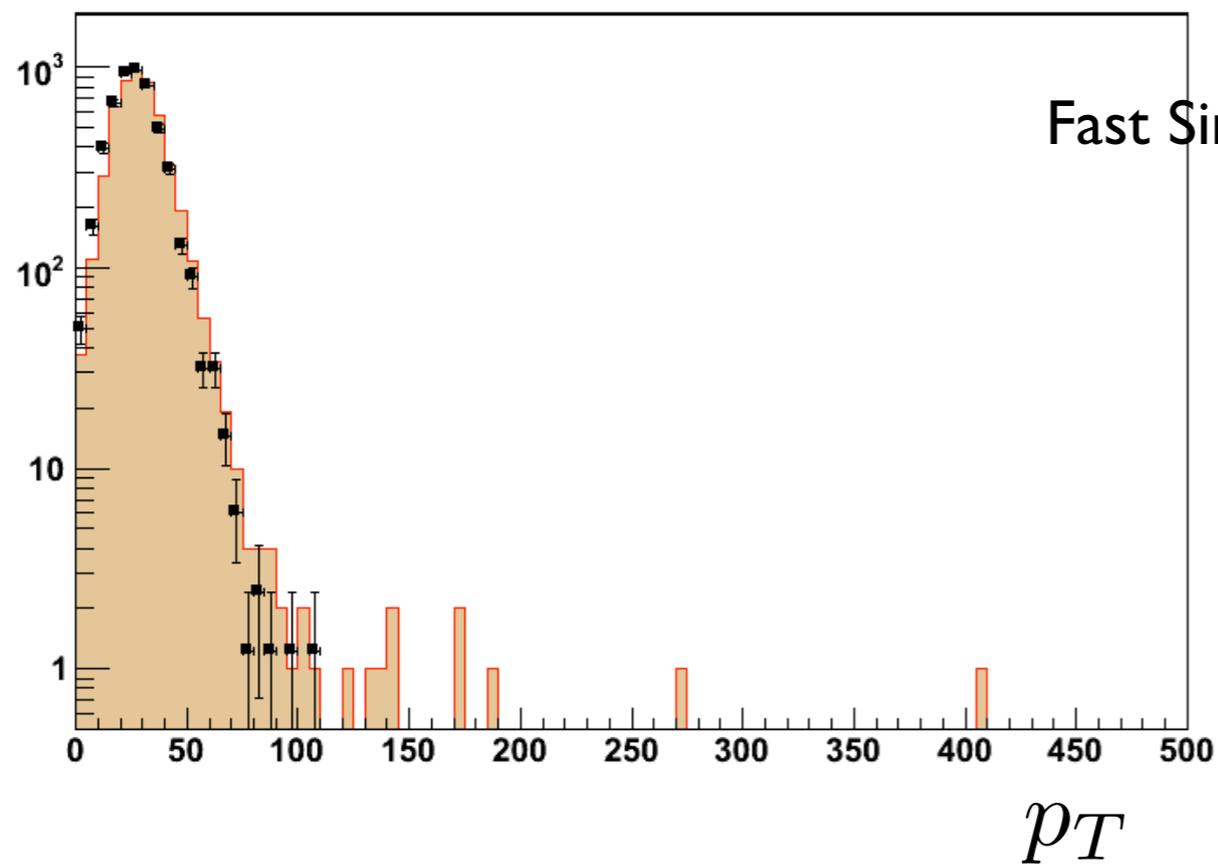
# 1610 Fast vs Full: Hardest Jet

**Fast/Full**  
Kolmogorov Test PV = 0.000008

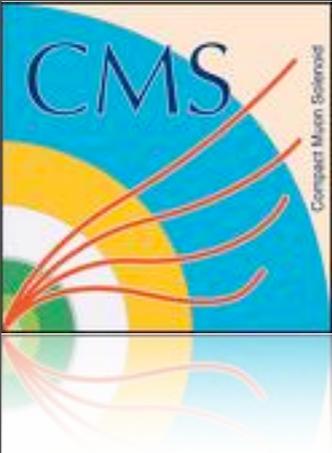
**Fast/Full**  
Kolmogorov Test PV = 0.000010

PtFirst

EFirst



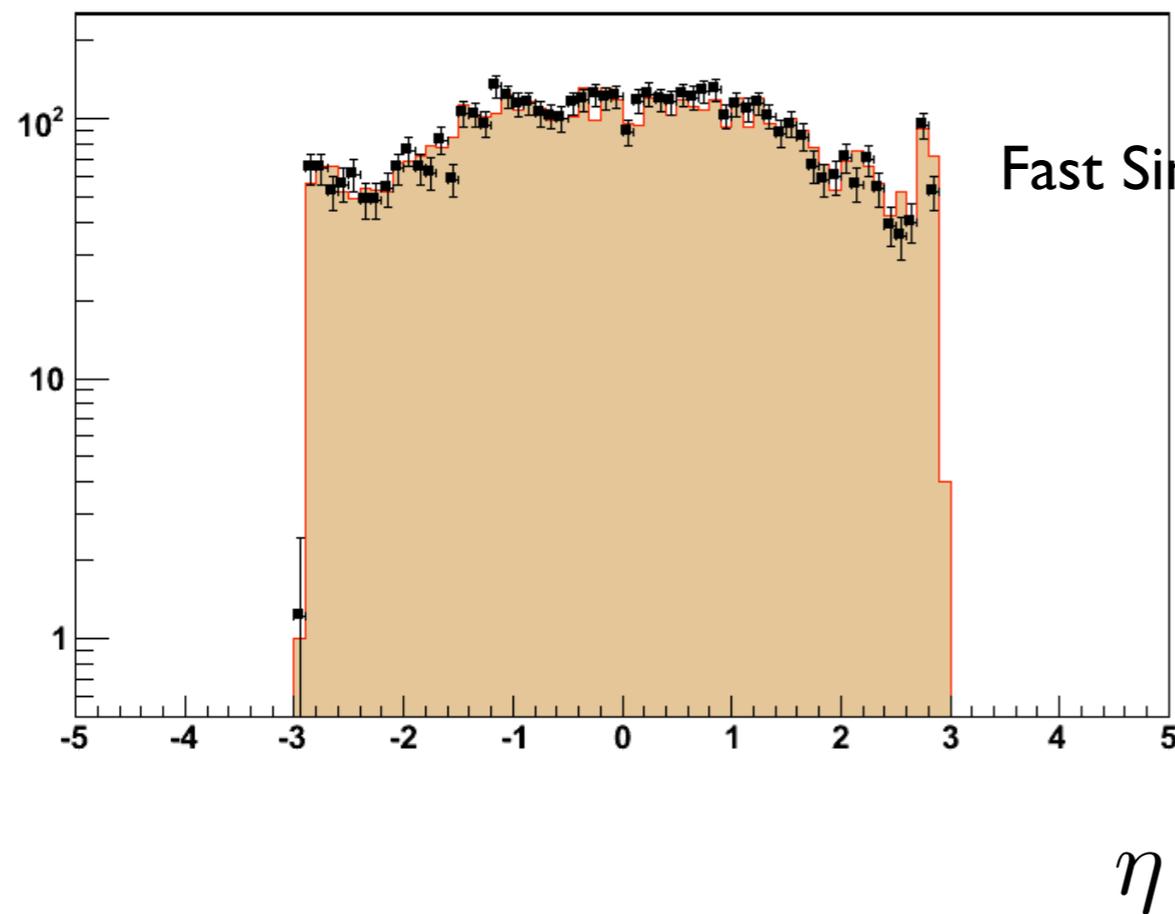
First jet : Good agreement in low pt & energy region



# 1610 Fast vs Full: Hardest Jet

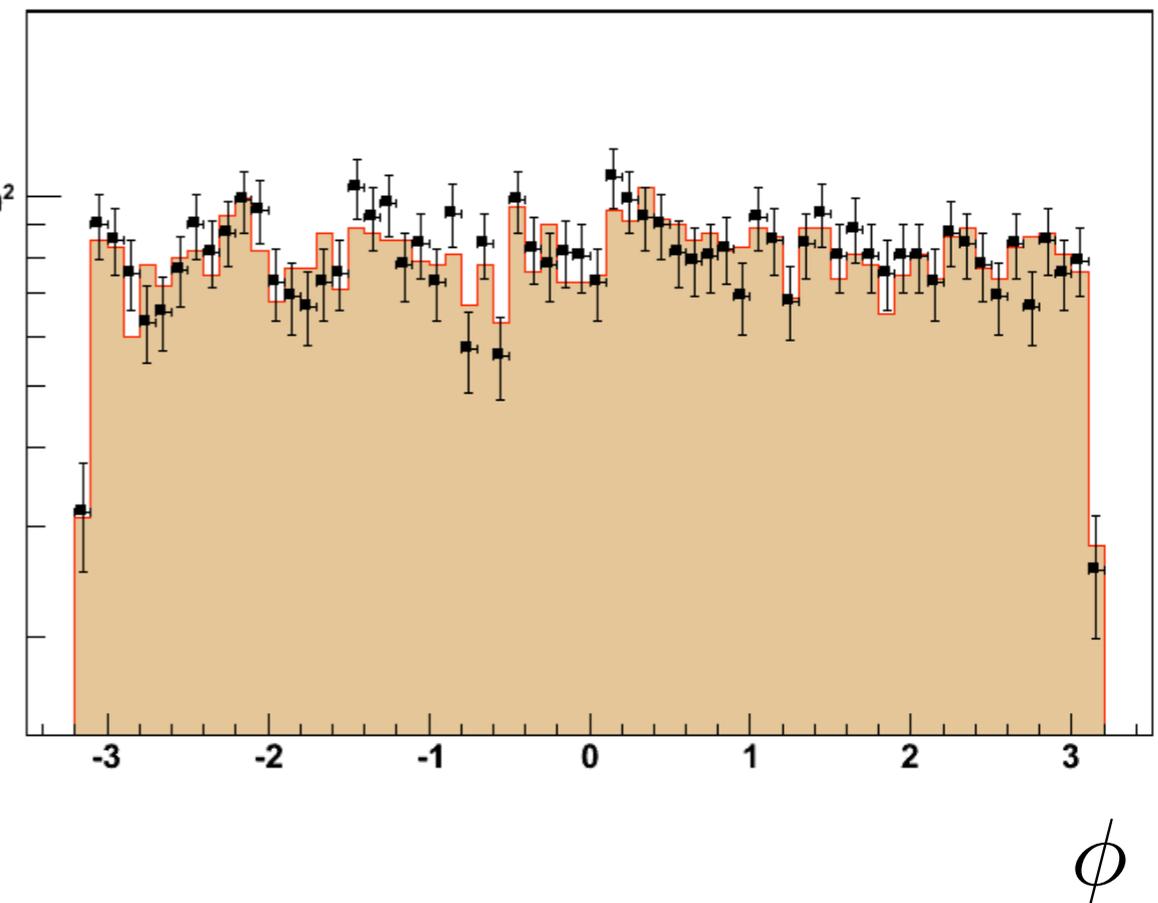
**Fast/Full**  
Kolmogorov Test PV = 0.567796

EtaFirst

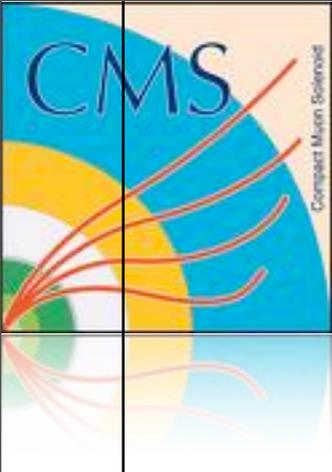


PhiFirst

**Fast/Full**  
Kolmogorov Test PV = 0.976570



First jet : Good agreement



# 1610 Fast vs Full: Specific Variables



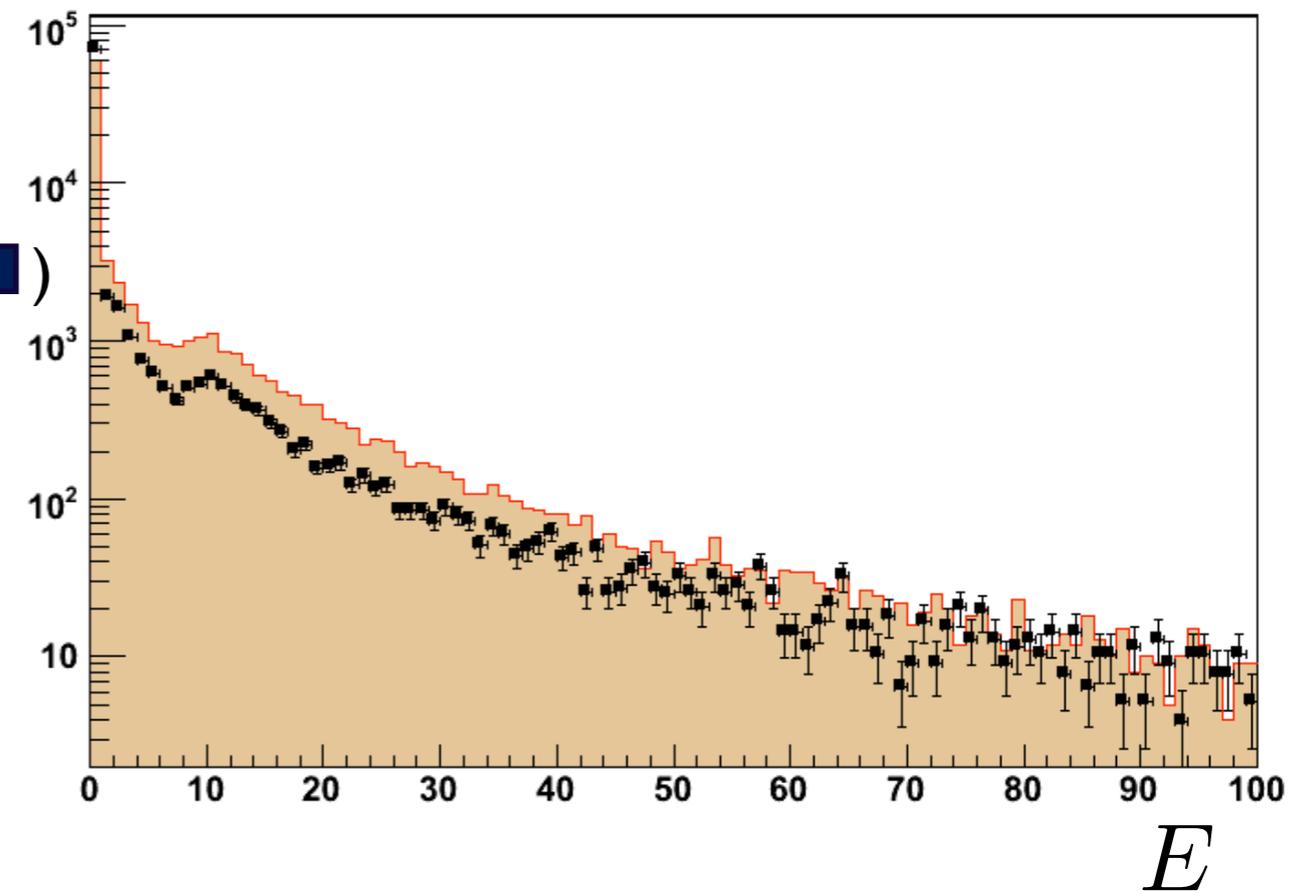
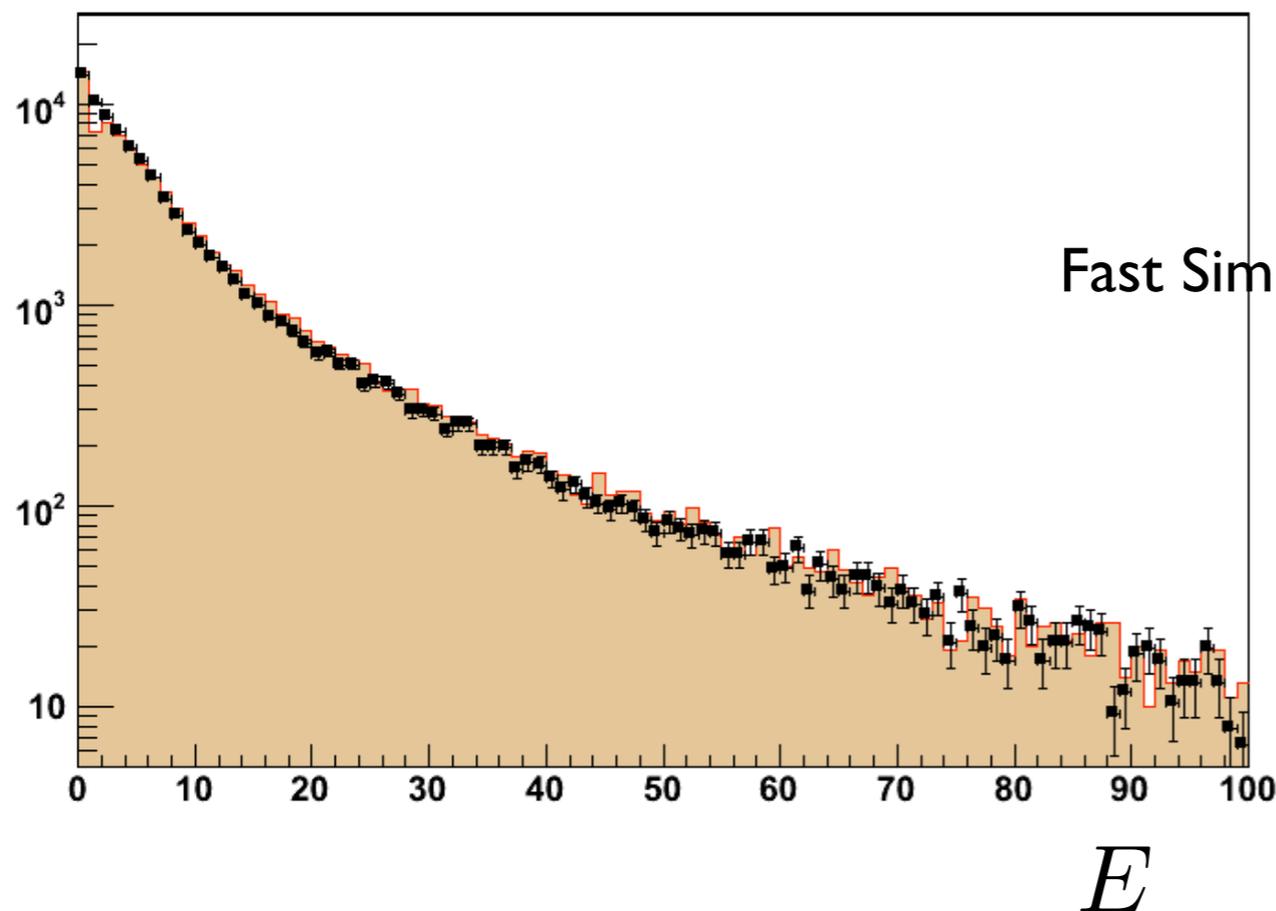
ETH Institute for  
Particle Physics

mChargedHadronEner

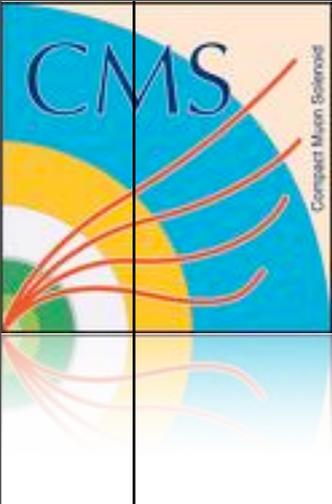
Fast/Full  
Kolmogorov Test PV = 0.000000

mNeutralHadronEner

Fast/Full  
Kolmogorov Test PV = 0.000000



Charged Hadron energy: Slightly smaller in FastSim  
Neutral Hadron Energy: disagreement - less in Fastsim



# 1610 Fast vs Full: Specific Variables



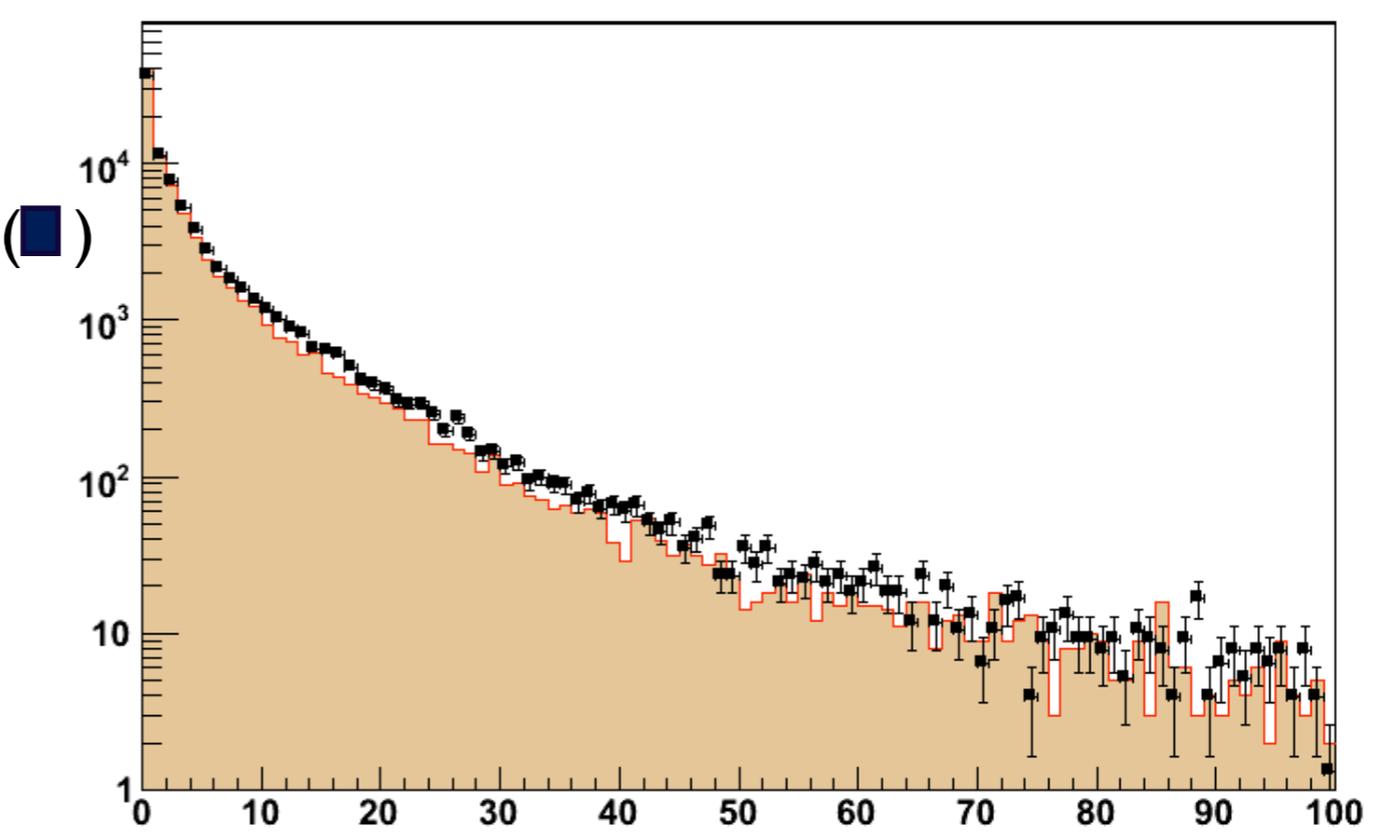
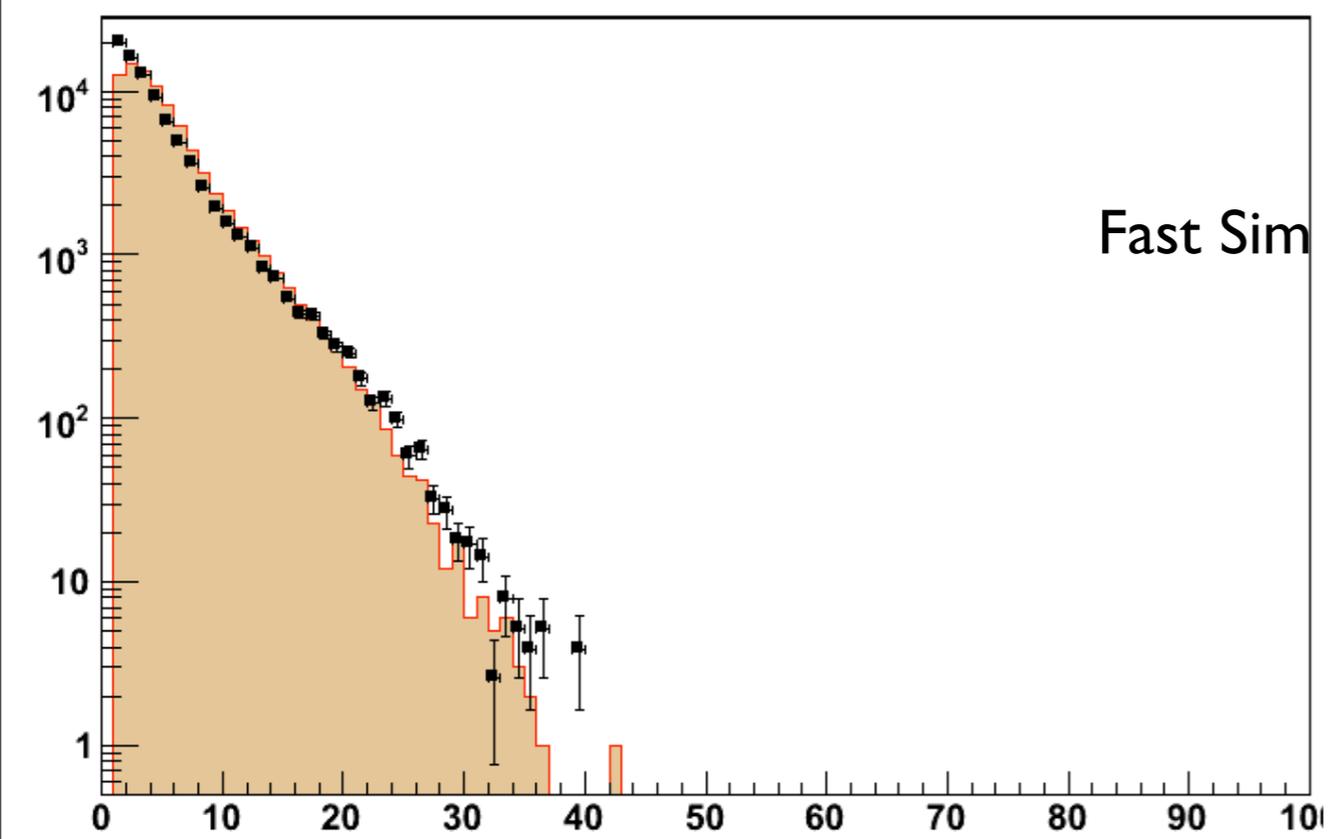
ETH Institute for  
Particle Physics

**Fast/Full**  
Kolmogorov Test PV = 0.000000

# of Constituents

mNeutralEmEnergy

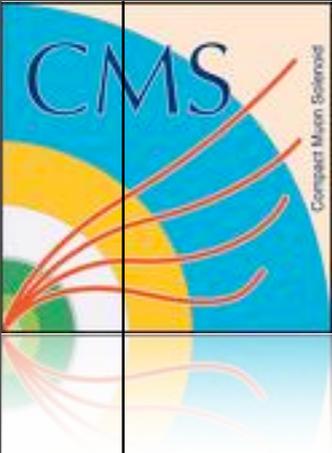
**Fast/Full**  
Kolmogorov Test PV = 0.000000



Fast Sim (■)

$E$

Number of jet constituents & Neutral Em Energy in  
the jet (photons): rather ok  
Muonic multiplicities: no muons included yet in pflow



# 1610 Fast vs Full: Specific Variables



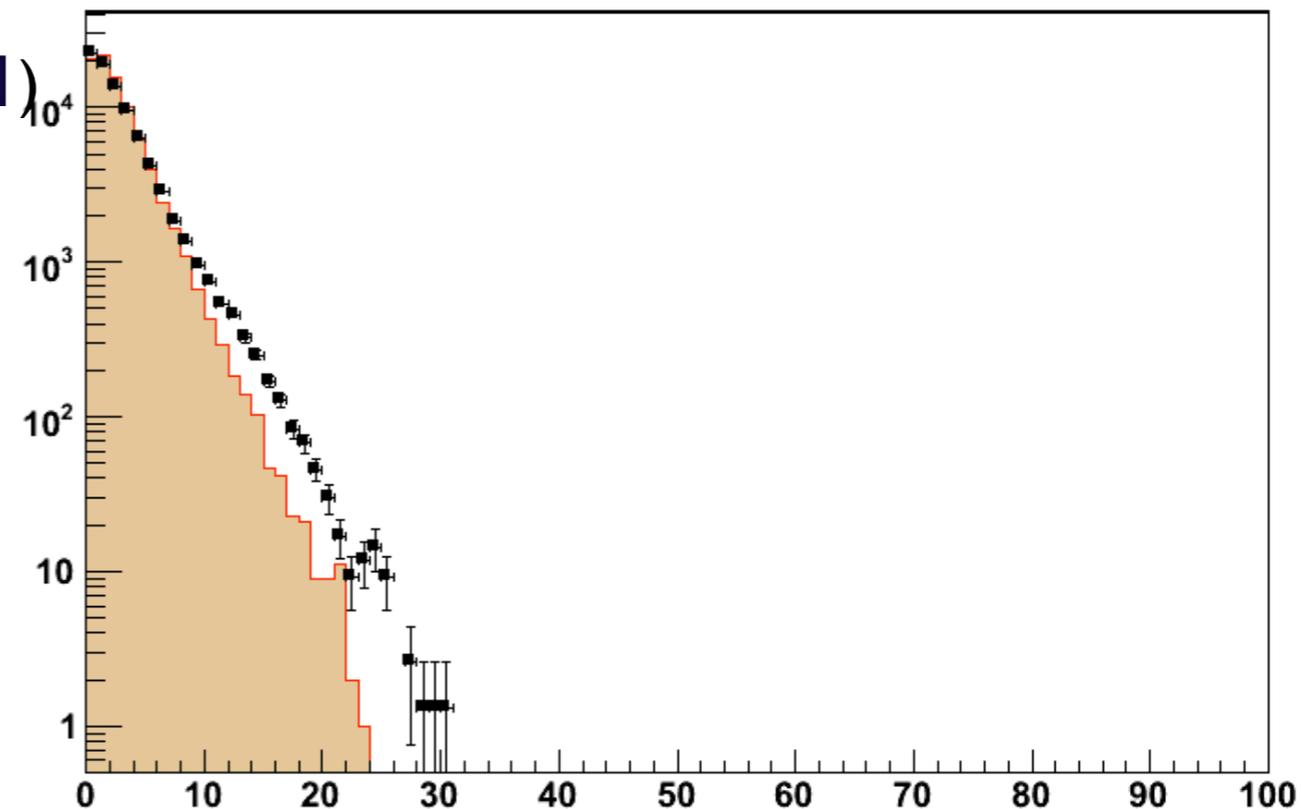
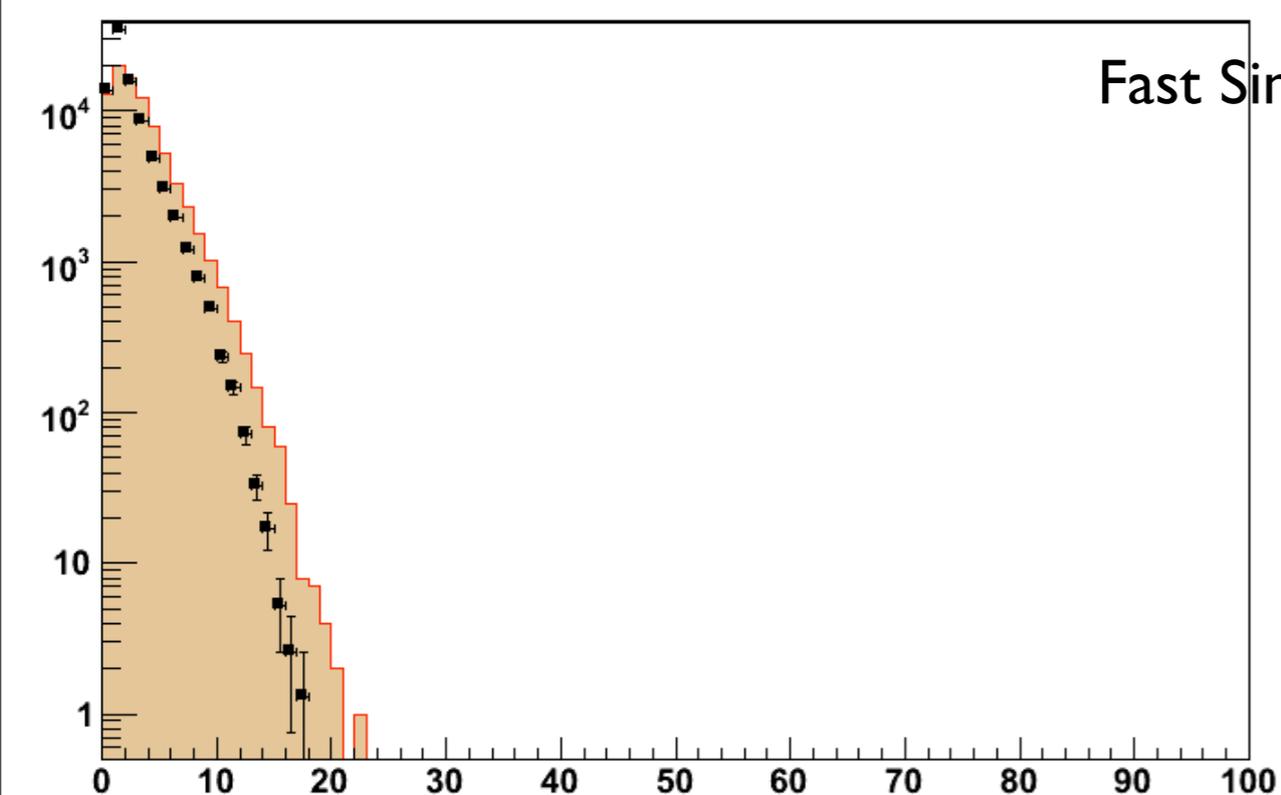
ETH Institute for  
Particle Physics

mChargedMultiplicity

**Fast/Full  
Kolmogorov Test PV = 0.000000**

mNeutralMultiplicity

**Fast/Full  
Kolmogorov Test PV = 0.000000**



Charged multiplicities: too small in FastSim  
Neutral multiplicities: too high in FastSim