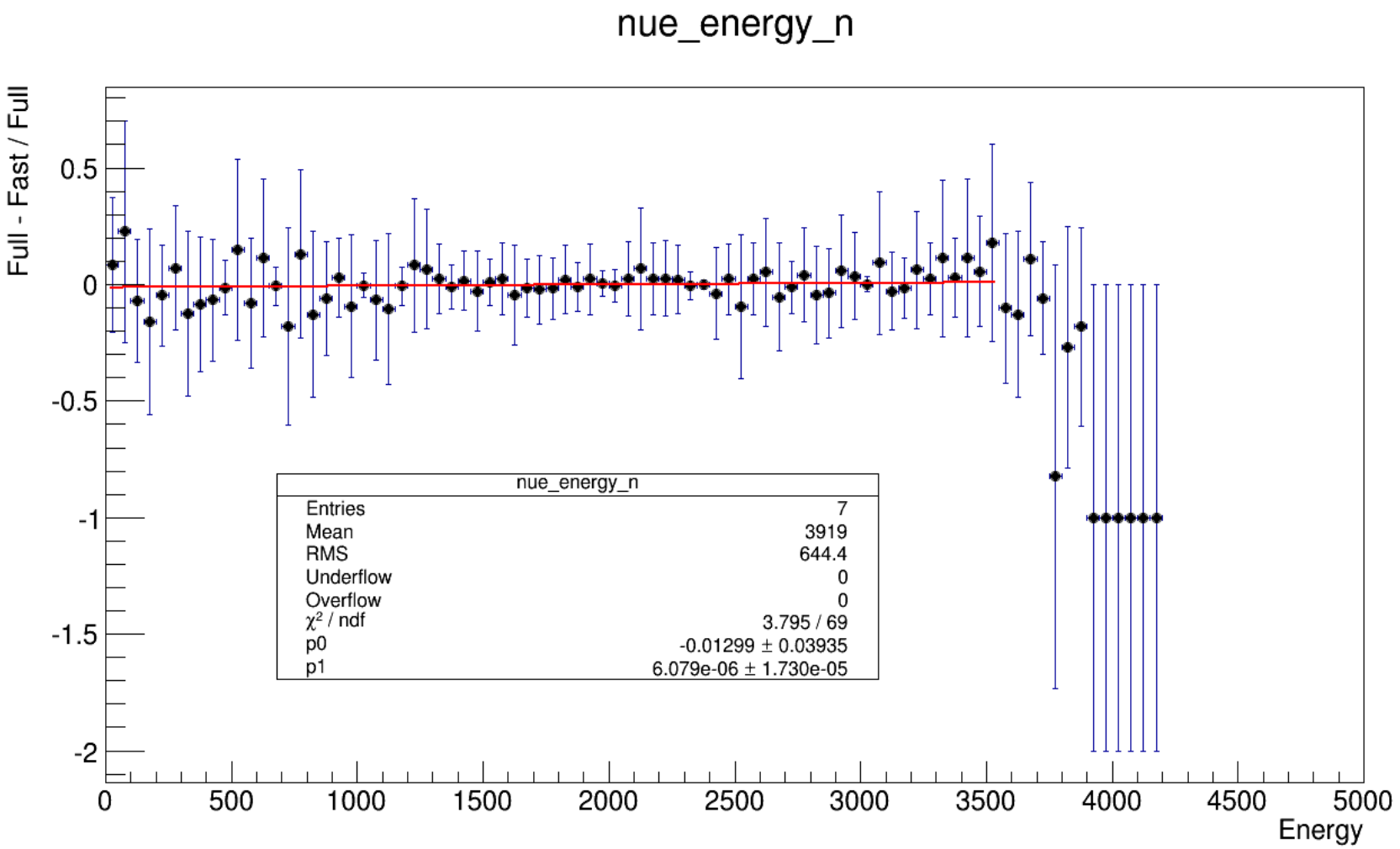
# Flux accuracy

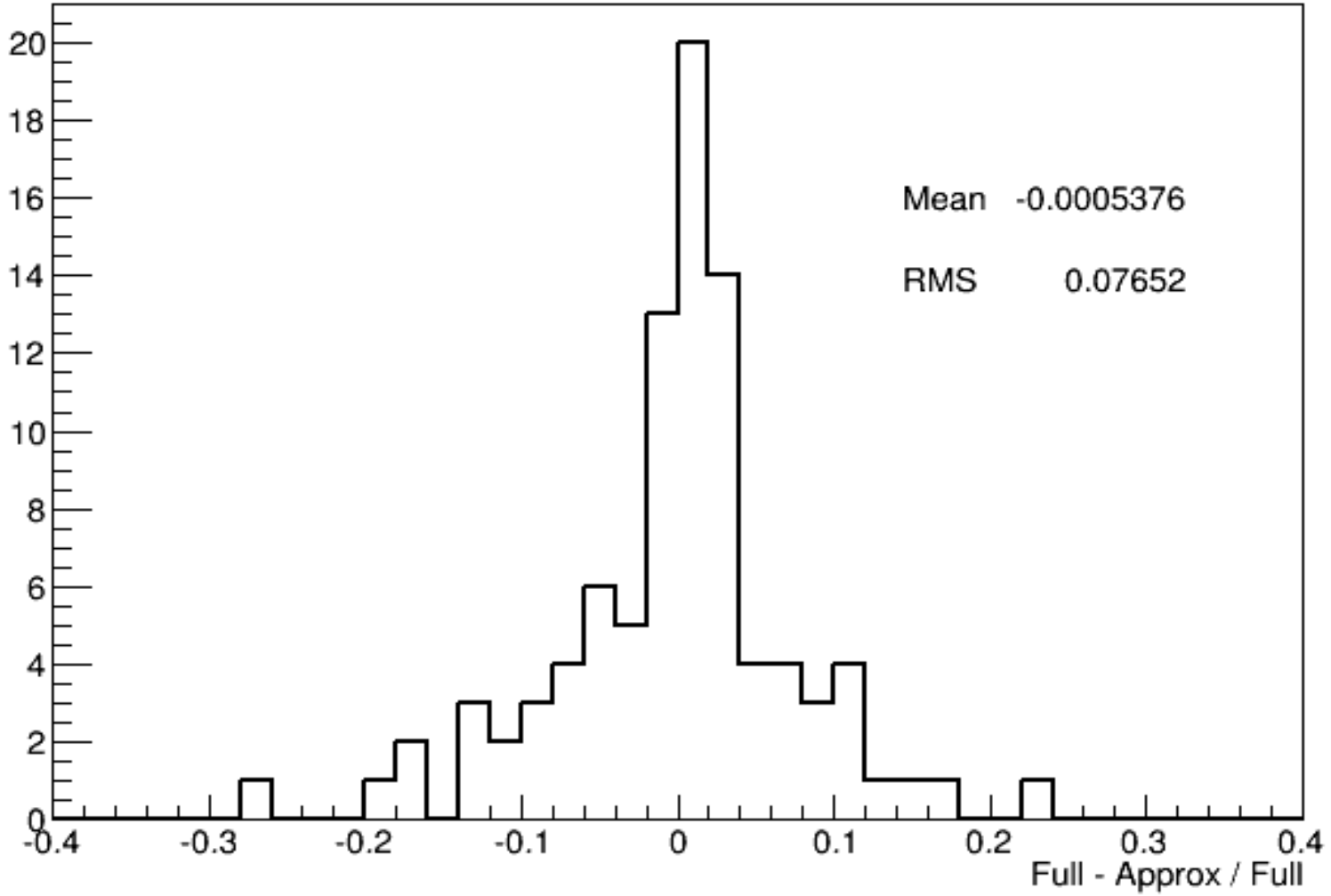
D Adey

nuSTORM Phone Meeting
14th March 2014

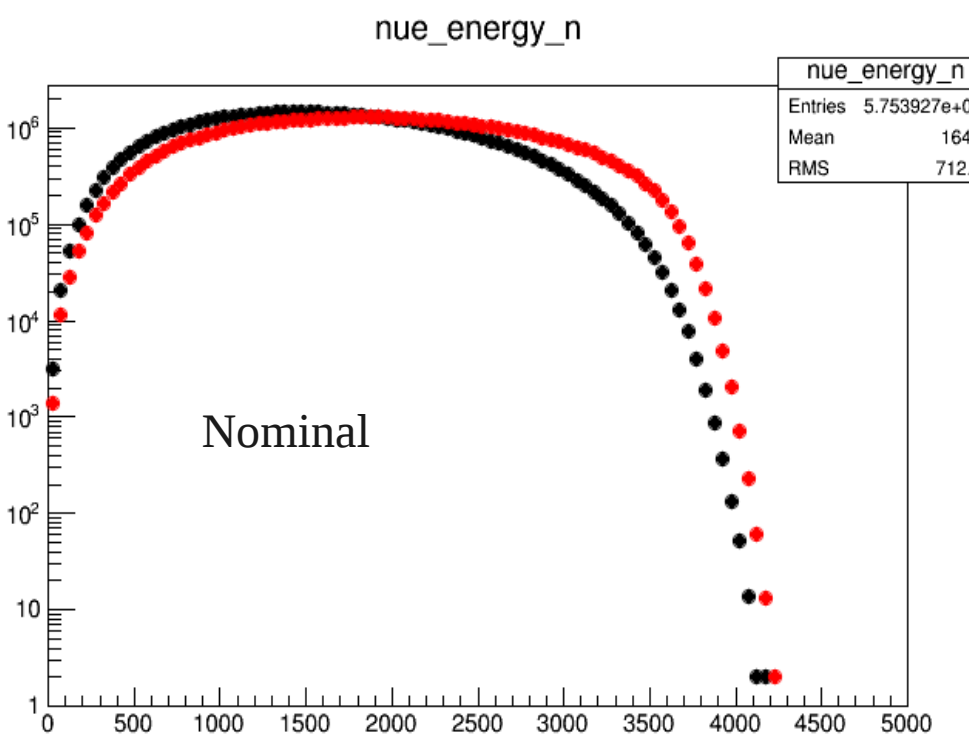
- Full and approximated simulations
- Scaled to 1 / integral
- (Full – Approximation) / Full
- NB Don't believe the error bars

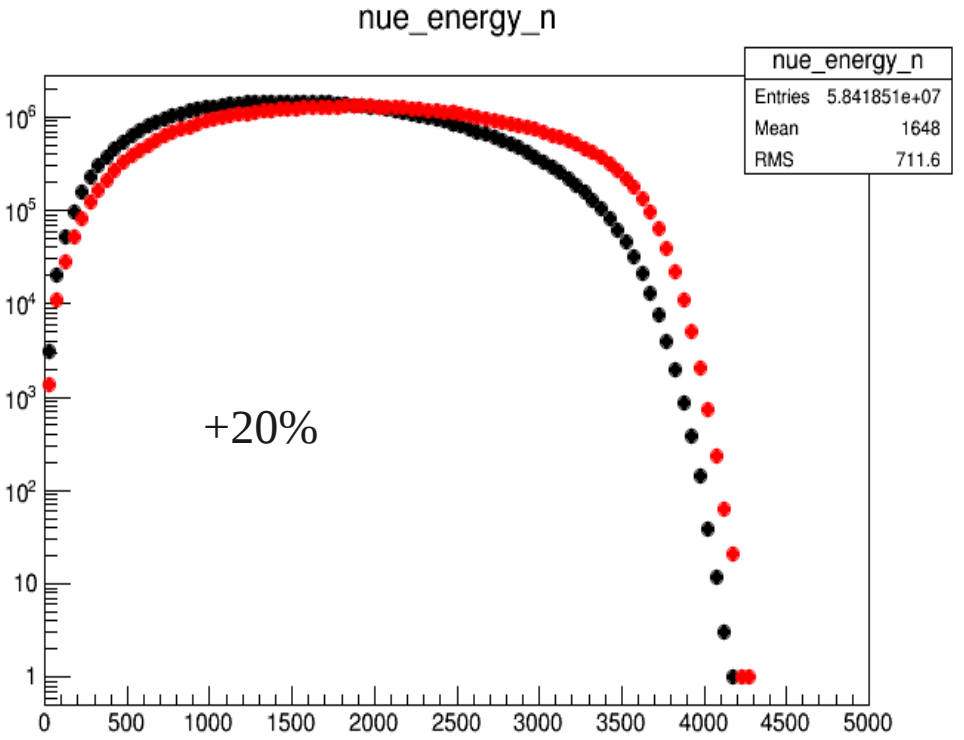


Distribution of bin difference fractions for Full and Approximated simulations
(Y projecion of previous histogram)



# + 20% divergence comparison

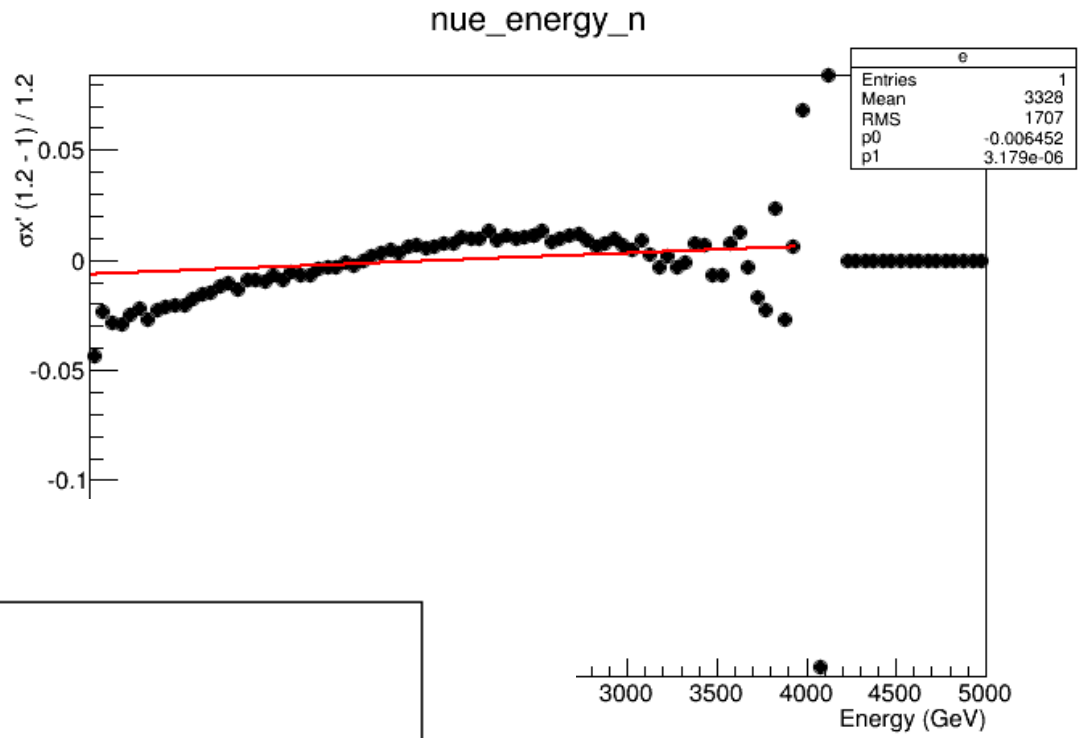


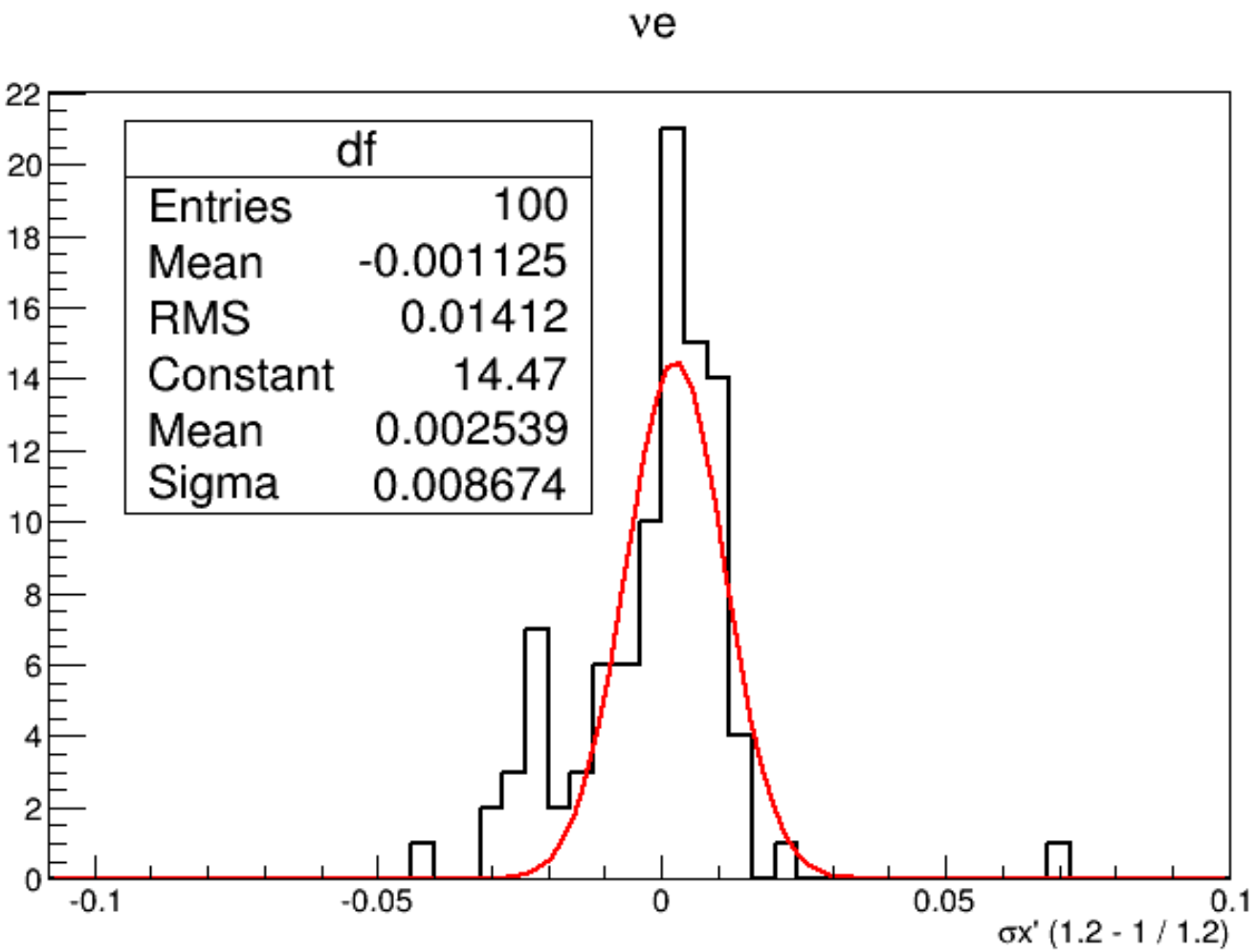



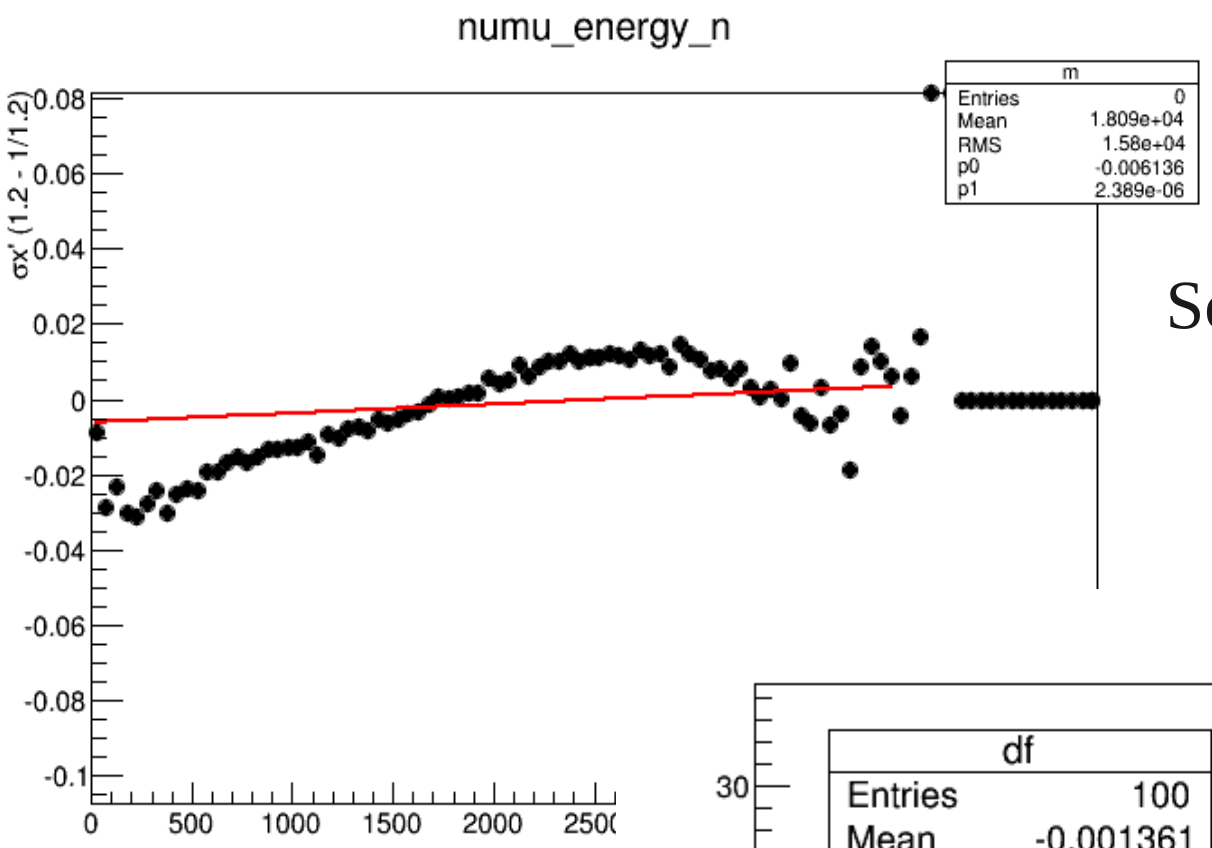

nu_mu

nu_e

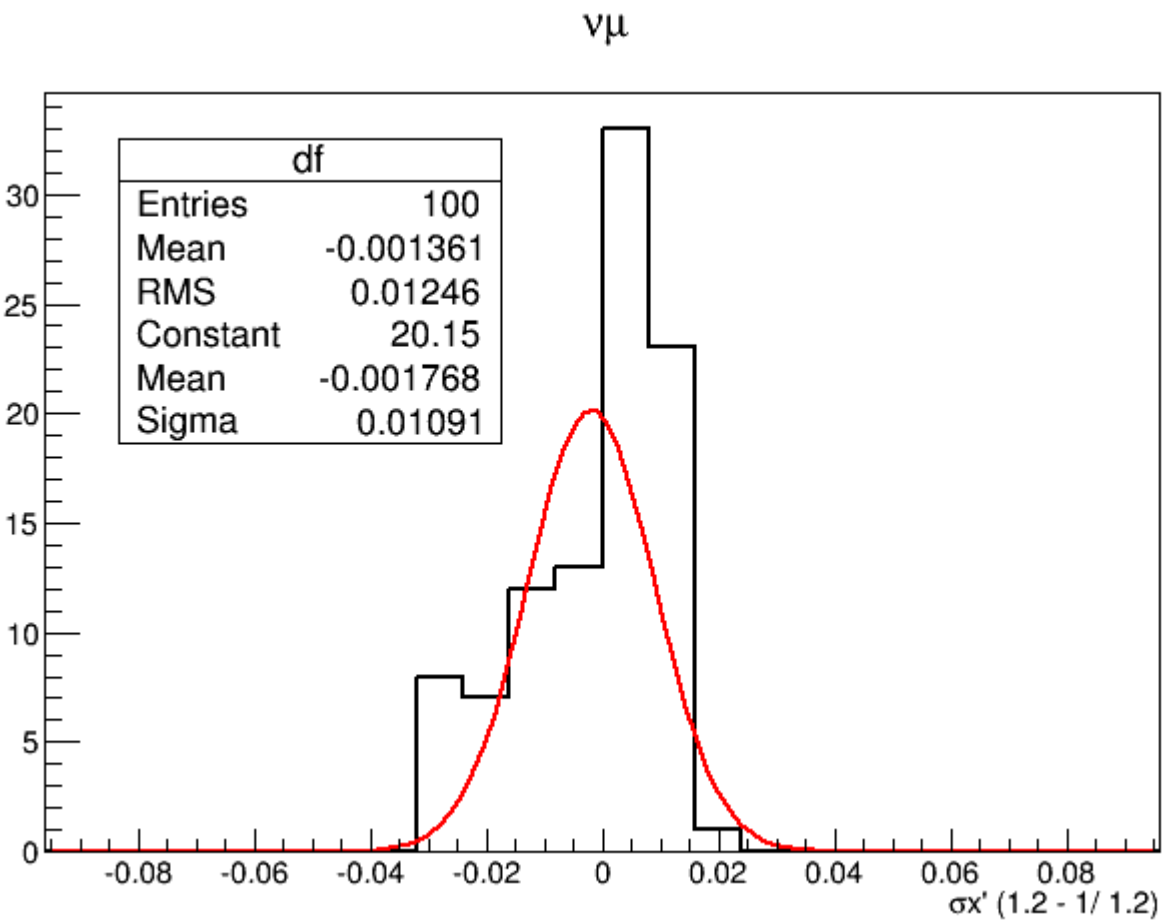
# Scaled bin differences for νe






Scaled bin differences for νμ



# Summary

- Approximation matches full simulation to within statistical errors
- Divergence error of 20% on muon beam generates 1-2% error on neutrino flux, bin-to-bin
- Abstract to Neutrino to be submitted today (following slide)

# Neutrino Abstract

The neutrinos from stored muons (nuSTORM) facility aims to provide a beam of electron and muon neutrinos with precisely known flavour content and with a flux precision of less than 1% per 50MeV energy bin. This s achieved by utilising both the 5 GeV/c pion beam that is injected into the decay ring and the stored muon beam at 3.8GeV/c. These beams can service both short and long baseline oscillation physics experiments, and neutrino interaction experiments at a near detector site.

The unprecedented precision on the neutrino flux is achieved by detailed knowledge of the stored muon beam within the storage lattice (both FODO and FFAG) and existing beam diagnostics capabilities. An overview of nuSTORM and its aims, along with the simulation results illustrating the flux precision will be presented.