



# Comparisons of Simulated Data Samples

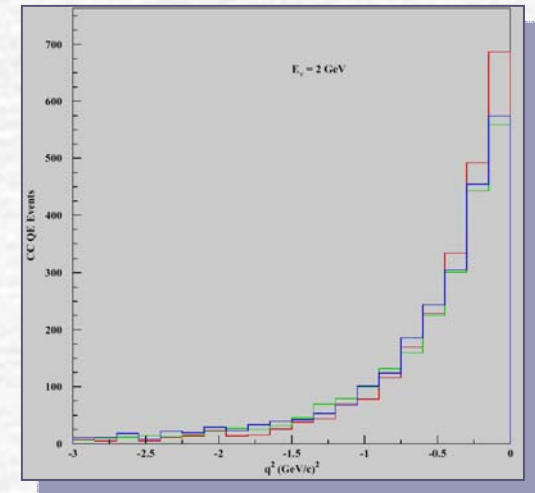
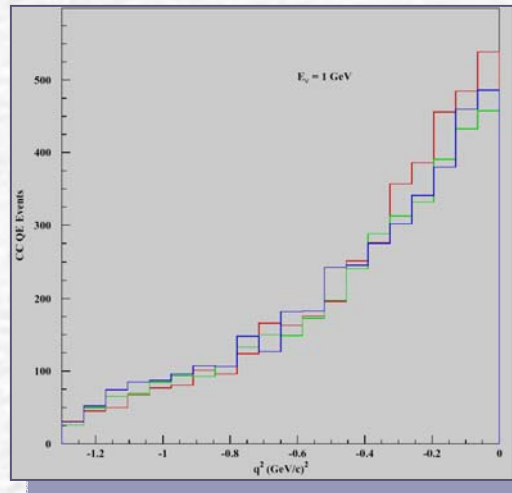
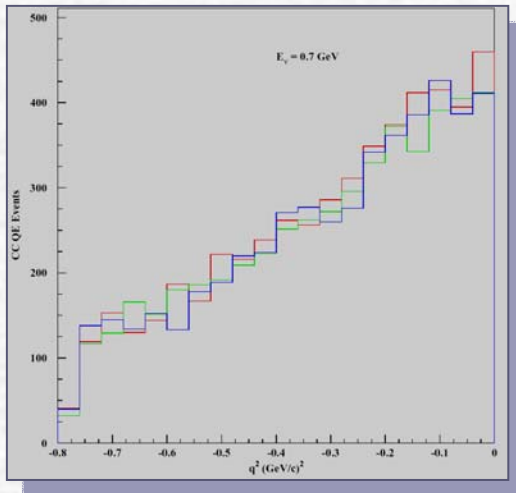
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# Introduction

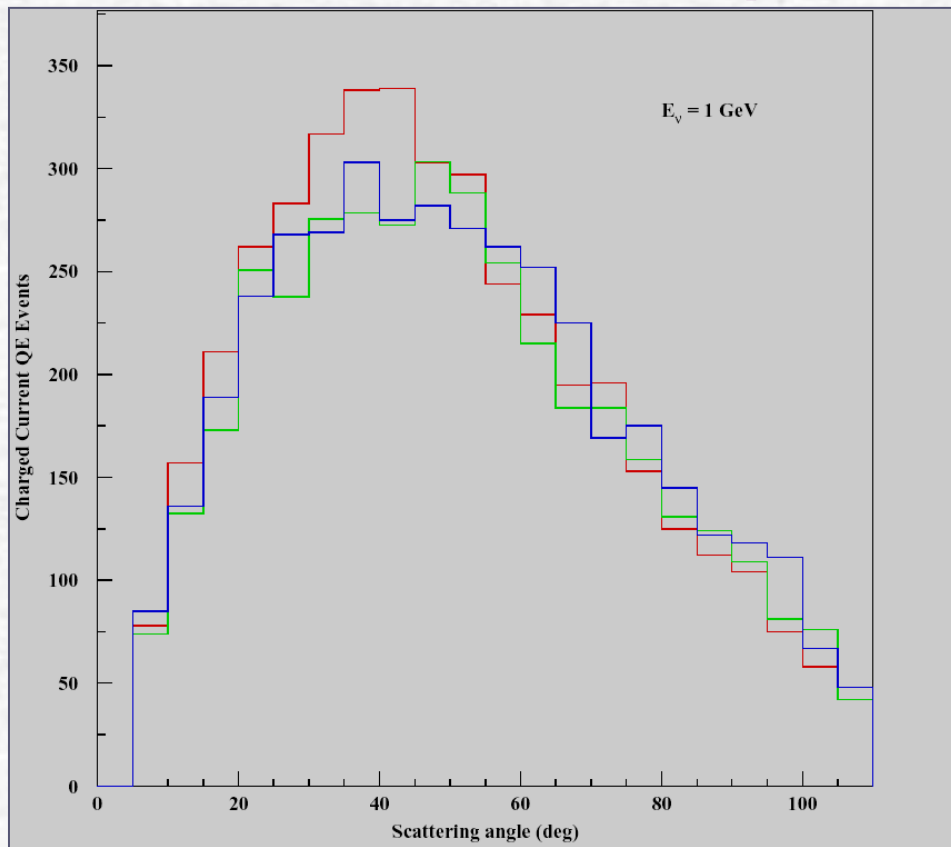
- Goal: To compare simulated samples where real data is not available
  - Complementary to previous talk
- Mono-energetic samples generated by:
  - P. Sala (**NUX**)
  - H. Gallagher (**NEUGEN**)
  - DC (**NUANCE**)
- For initial comparison:
  - Concentrate on neutrino + free nucleons
- Very preliminary: “work in progress”

# Charged-Current Quasi-Elastic

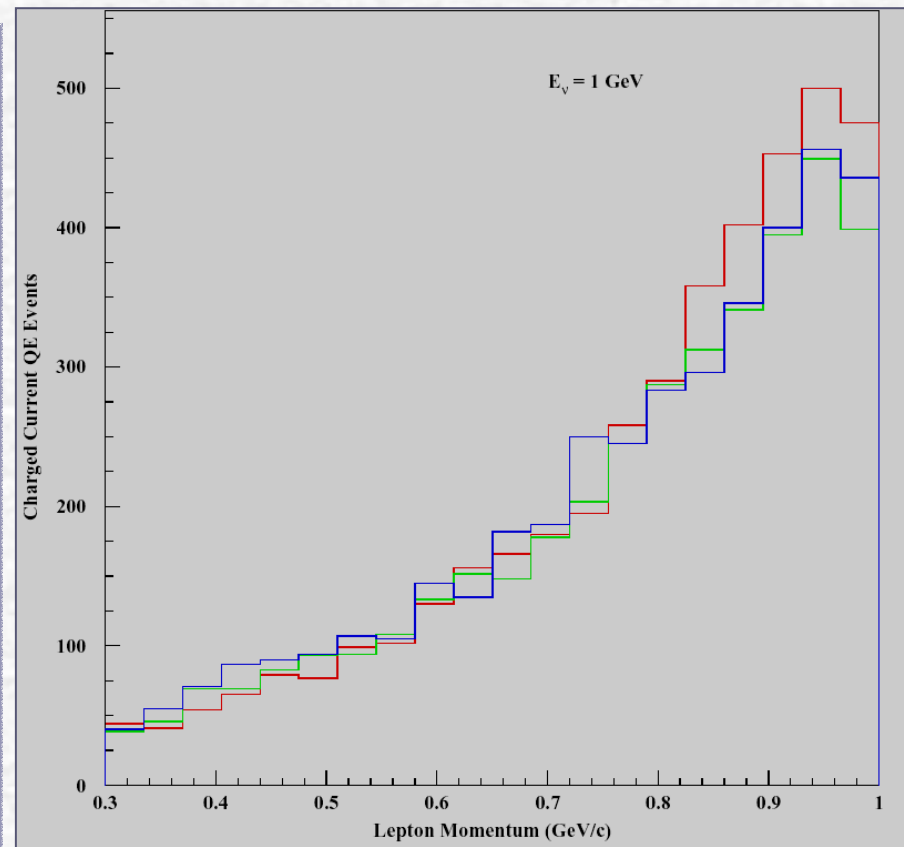


- For free nucleons, charged-current quasi-elastic should be robust
- Nuance appears to favor small  $q^2$  with increasing energy, compared to Nux and Neugen
- Puzzling...

# CCQE Lepton Distributions

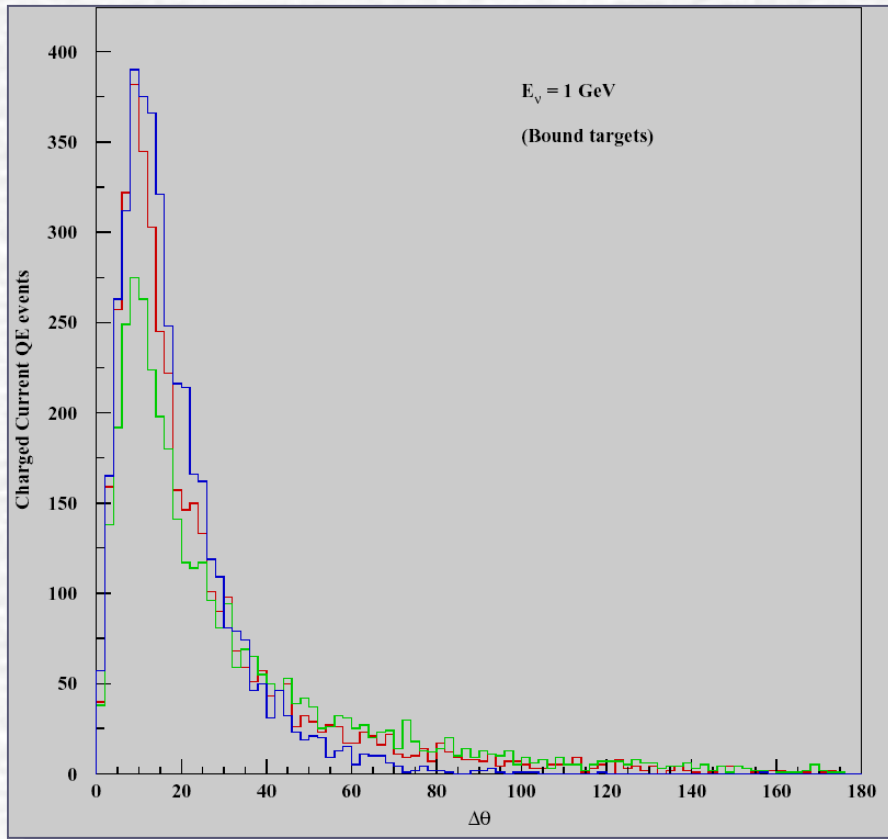


Lepton scattering angle

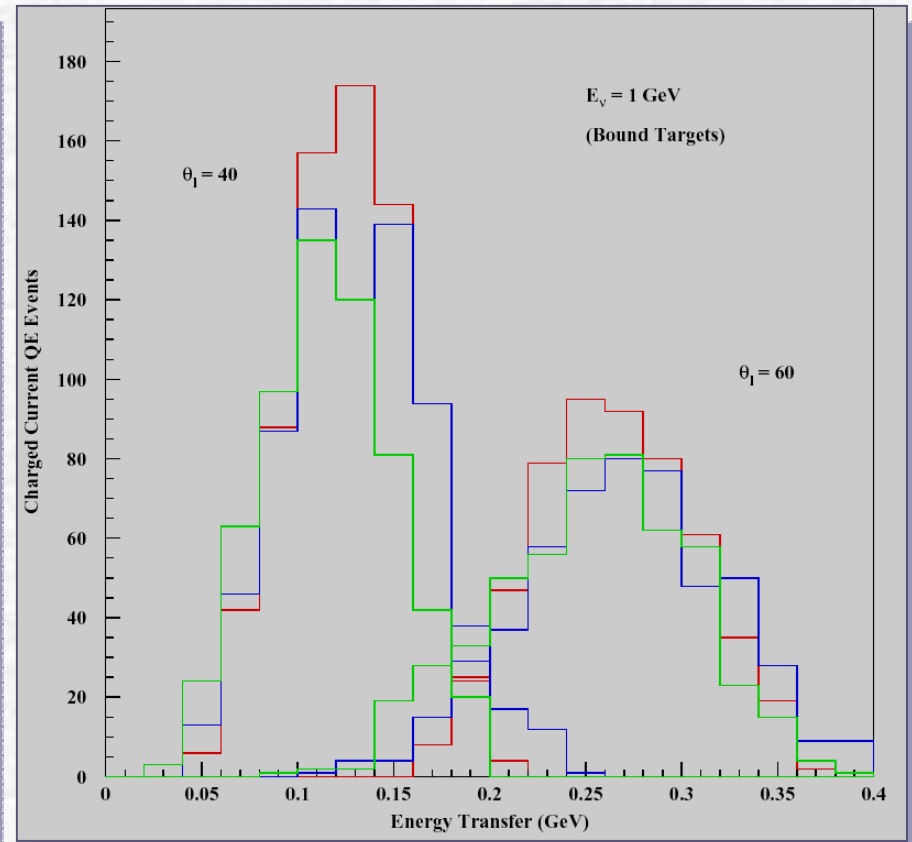


Lepton momentum

# Quasi-Elastic (Bound Targets)

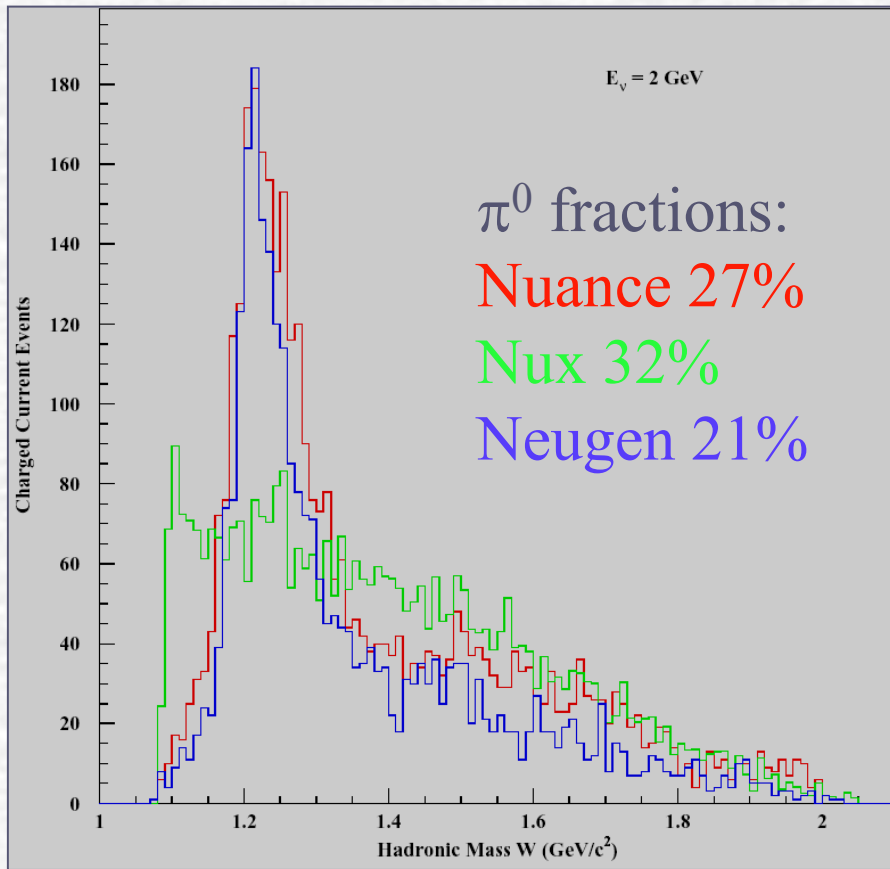


Proton rescattering

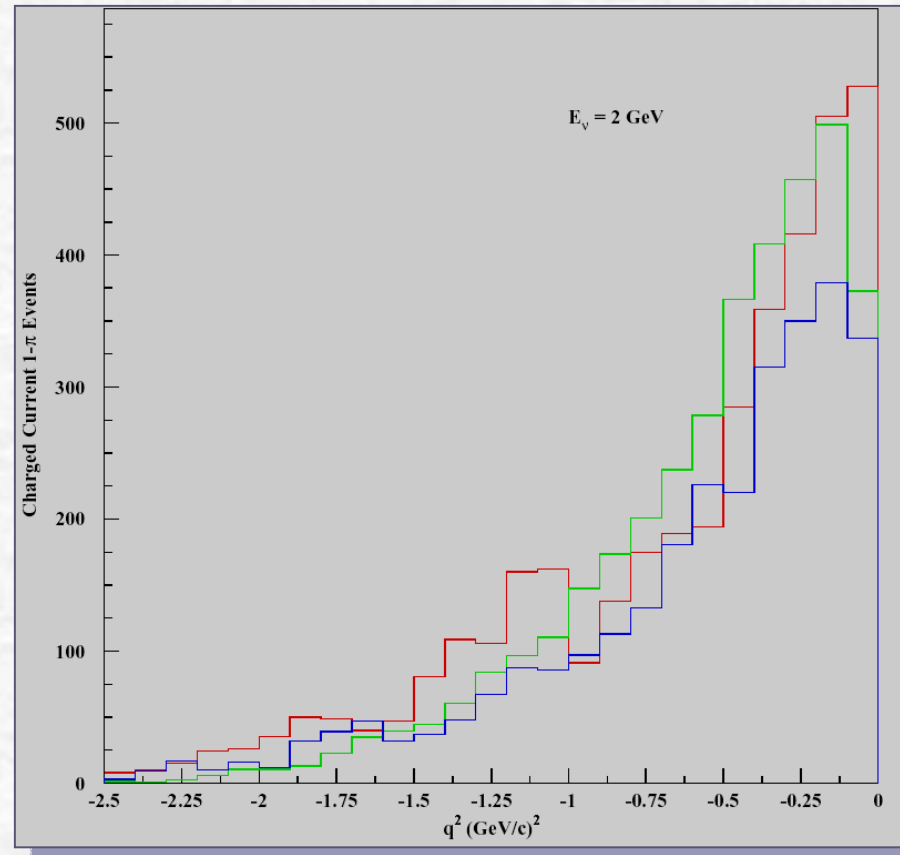


Energy transfer at two angles

# Charged-Current Single Pions

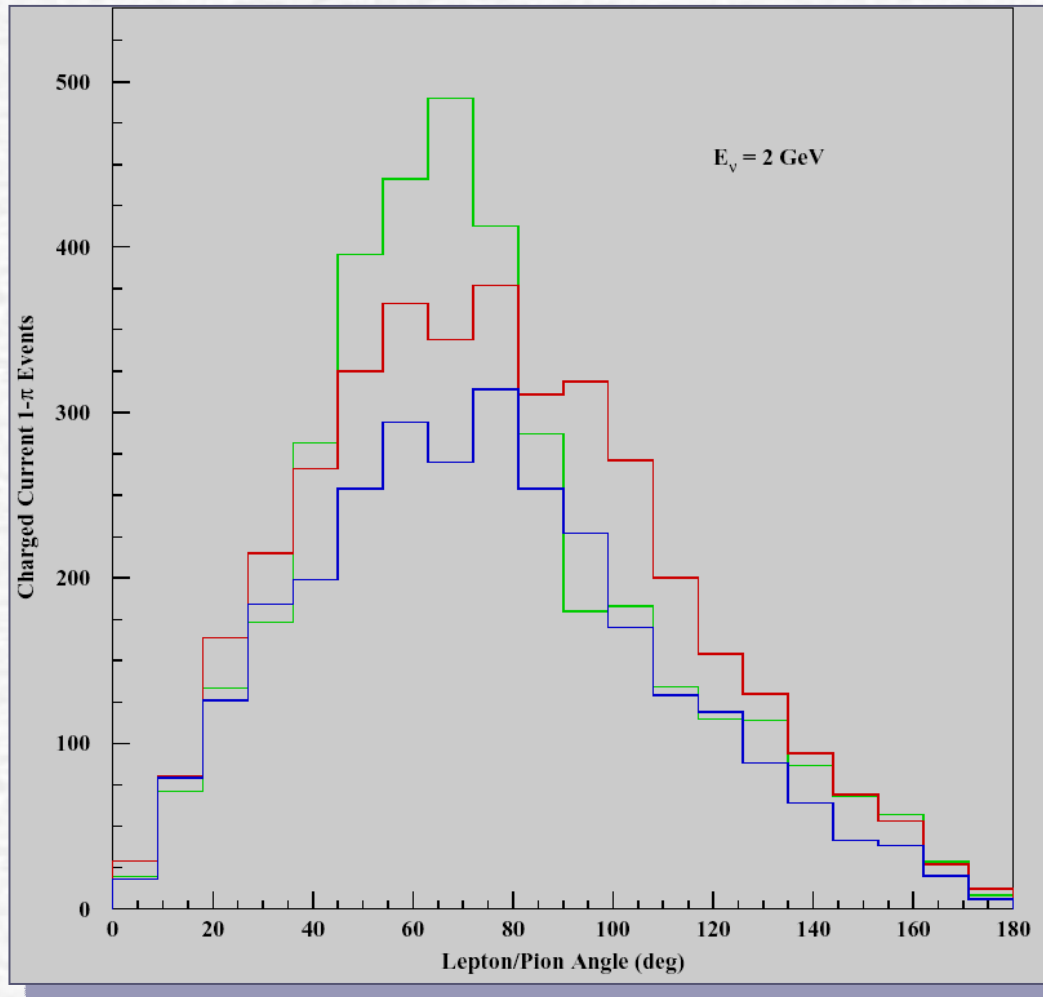


Hadronic Mass  $W$



Momentum Transfer  $q^2$

# Lepton/Pion Kinematics





# Bound Targets: Pion Interactions



Neutral Current Single  $\pi^0$



# High-Energy Inclusive Distributions



# Scaling Variables





# Charged Hadron Multiplicities



# Bound Targets: Nuclear Effects



# Conclusions

