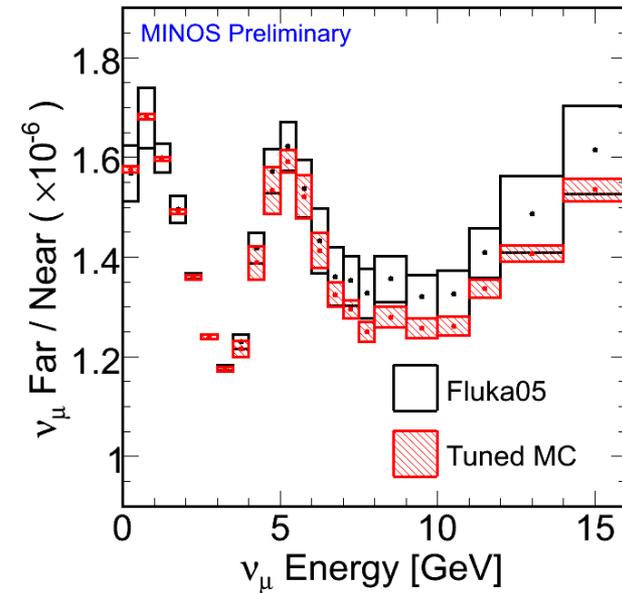
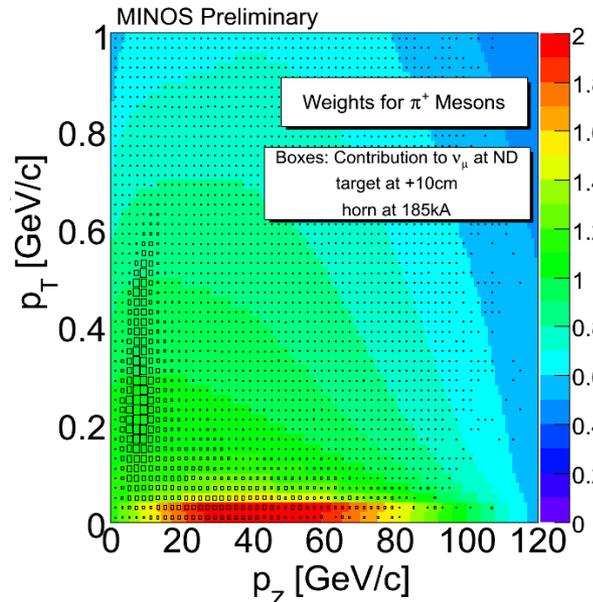
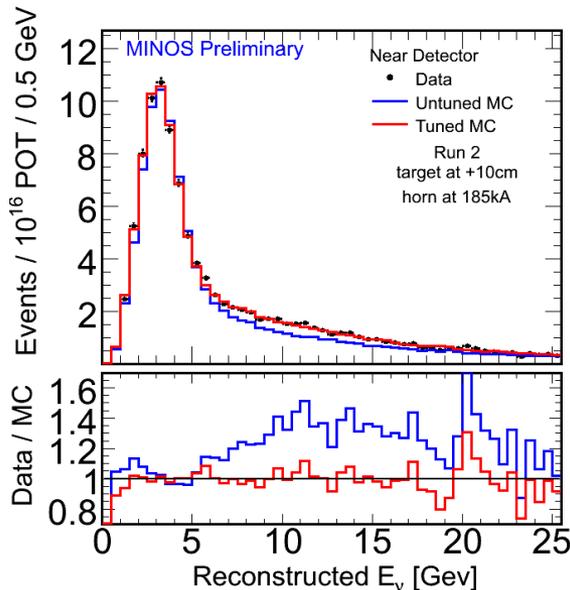
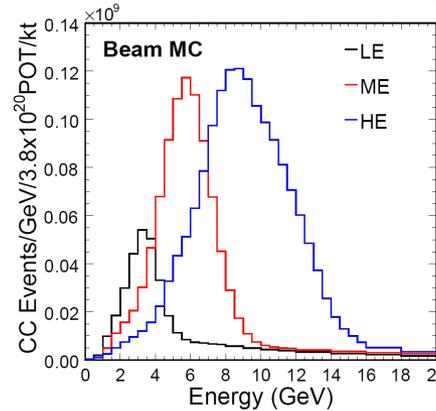
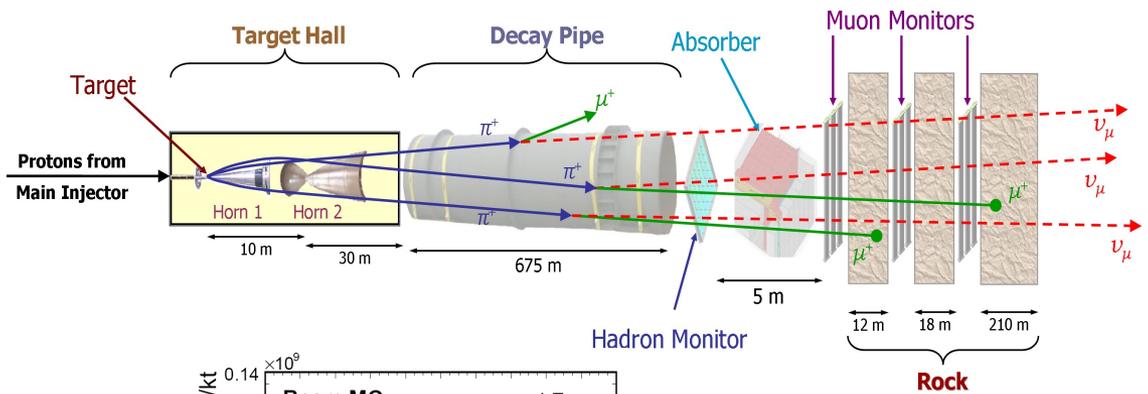




# NuMI Beam

- **Target is movable**
  - Variable  $\nu$  energy from to 15 GeV
- **Use Near Detector data**
  - tune hadron production off target by re-weighting meson distributions
- **Drastically Reduced uncertainty in Far Detector prediction**





# NuMI Target Degradation

Gradual decrease in neutrino rate attributed to target radiation damage

NuMI target NT-02 exposed to  $6 \times 10^{20}$  protons

Step change, when decay pipe changed from vacuum to helium fill

