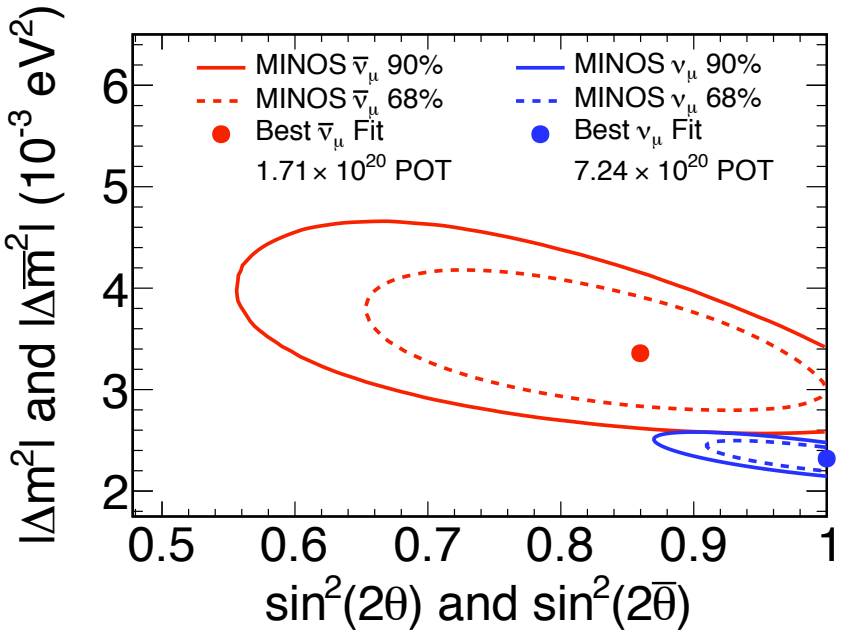
MINOS results in 2010



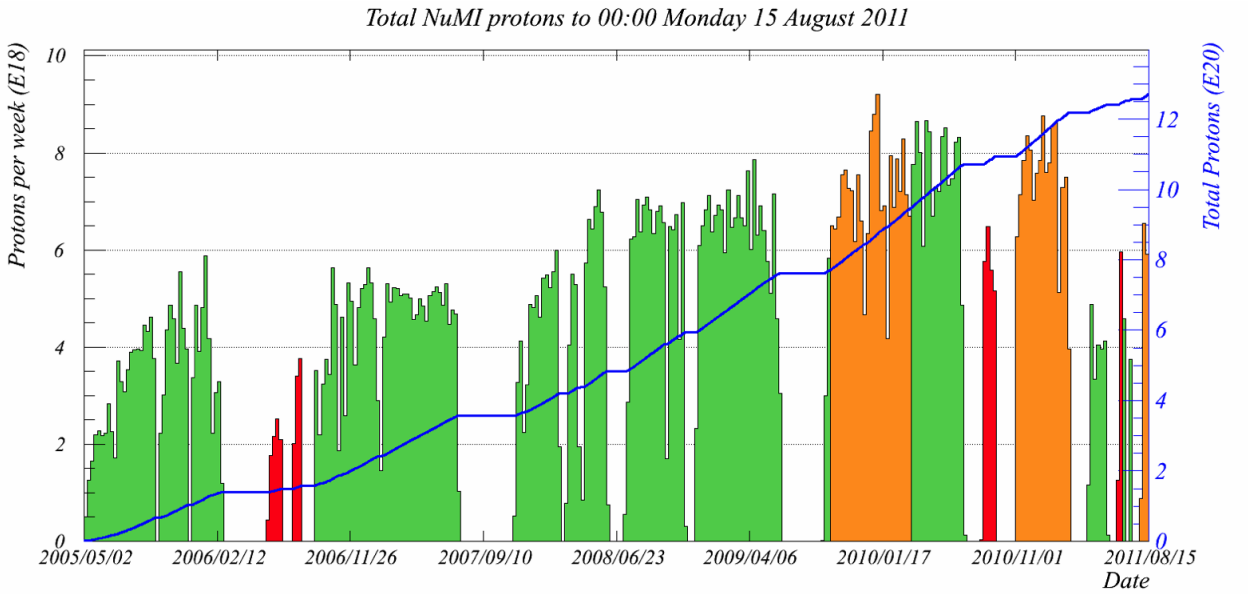
In 2010, MINOS released the world's best measurements of the largest neutrino and antineutrino mass splittings

They showed a tension

- Assuming the same oscillation parameters, this level of difference would be seen in 2.0% of experiments

Since then, more antineutrino data has been taken

- Increasing the statistics by a factor of 1.73



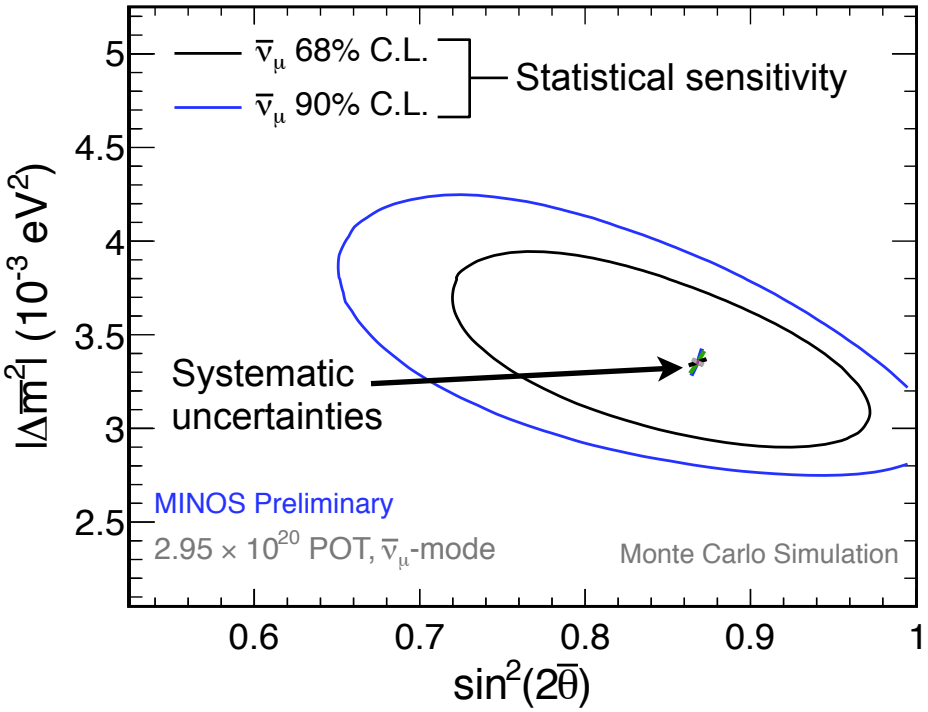
The new analysis

Changes since the 2010 analysis

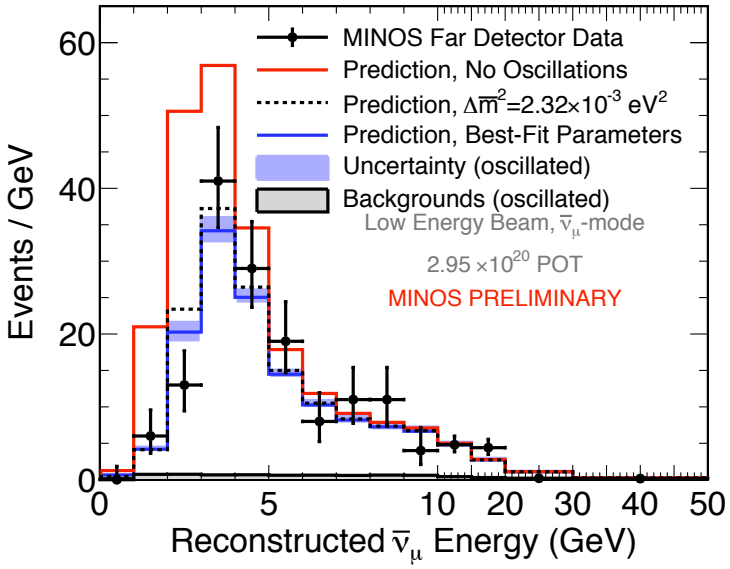
- A new hadronic shower energy estimator, improving the energy resolution of showers below 2 GeV by up to 40%
- An improved near detector selection, removing events passing through or near the poorly-modeled magnetic coil

Systematic uncertainties are still very small in comparison to the statistical sensitivity

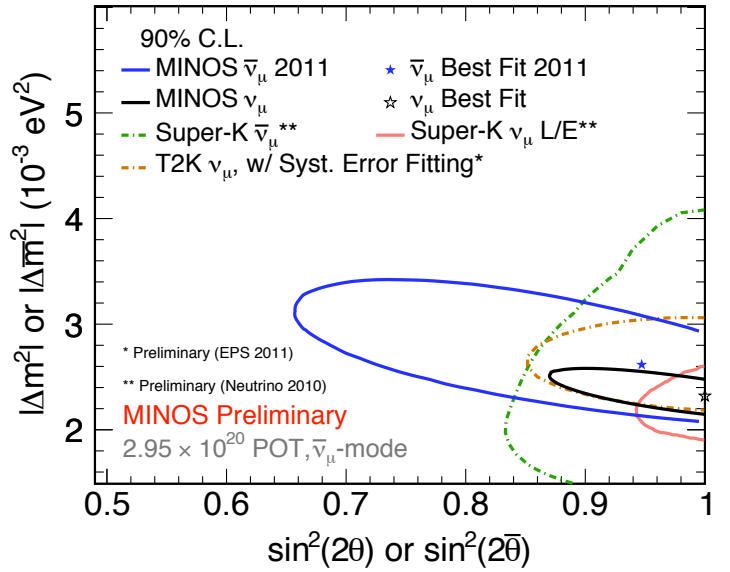
- The main systematic uncertainties are those on the energy measurements of muons and hadronic showers



New oscillation measurement



Spectrum	Event count
Observed	193
Prediction: no oscillations	273.1
Prediction: neutrino best fit	193.3



$$|\Delta\overline{m}^2_{\text{atm}}| = \left[2.62^{+0.31}_{-0.28}(\text{stat}) \pm 0.09(\text{syst})\right] \times 10^{-3}\text{eV}^2$$

$$\sin^2(2\bar{\theta}_{23}) = 0.95^{+0.10}_{-0.11}(\text{stat}) \pm 0.01(\text{syst})$$