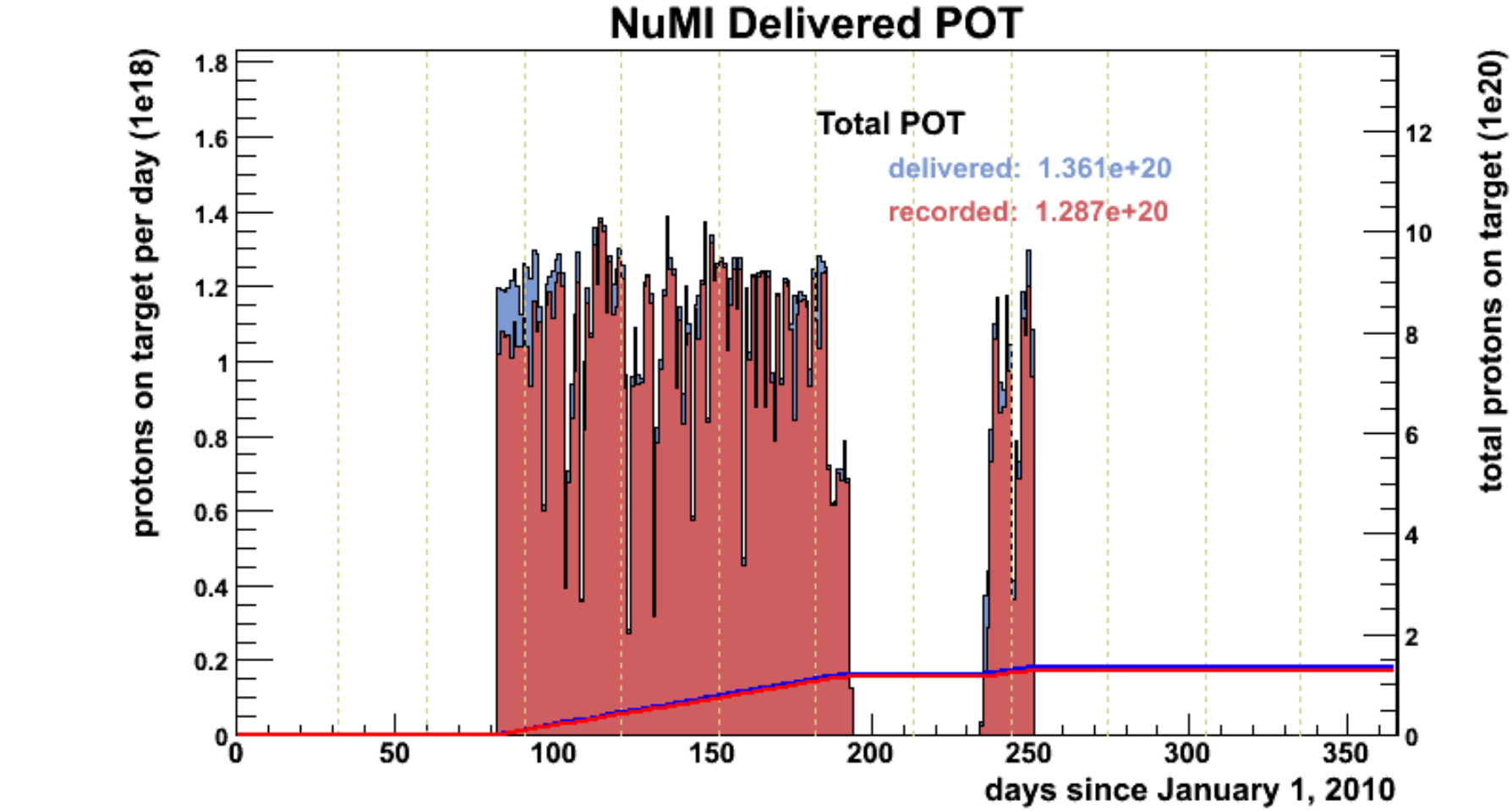
The MINERνA Operations Report
All Experimenters Meeting

Howard Budd, University of Rochester

Sep 13, 2010

MINERnA
March 2010 - Present

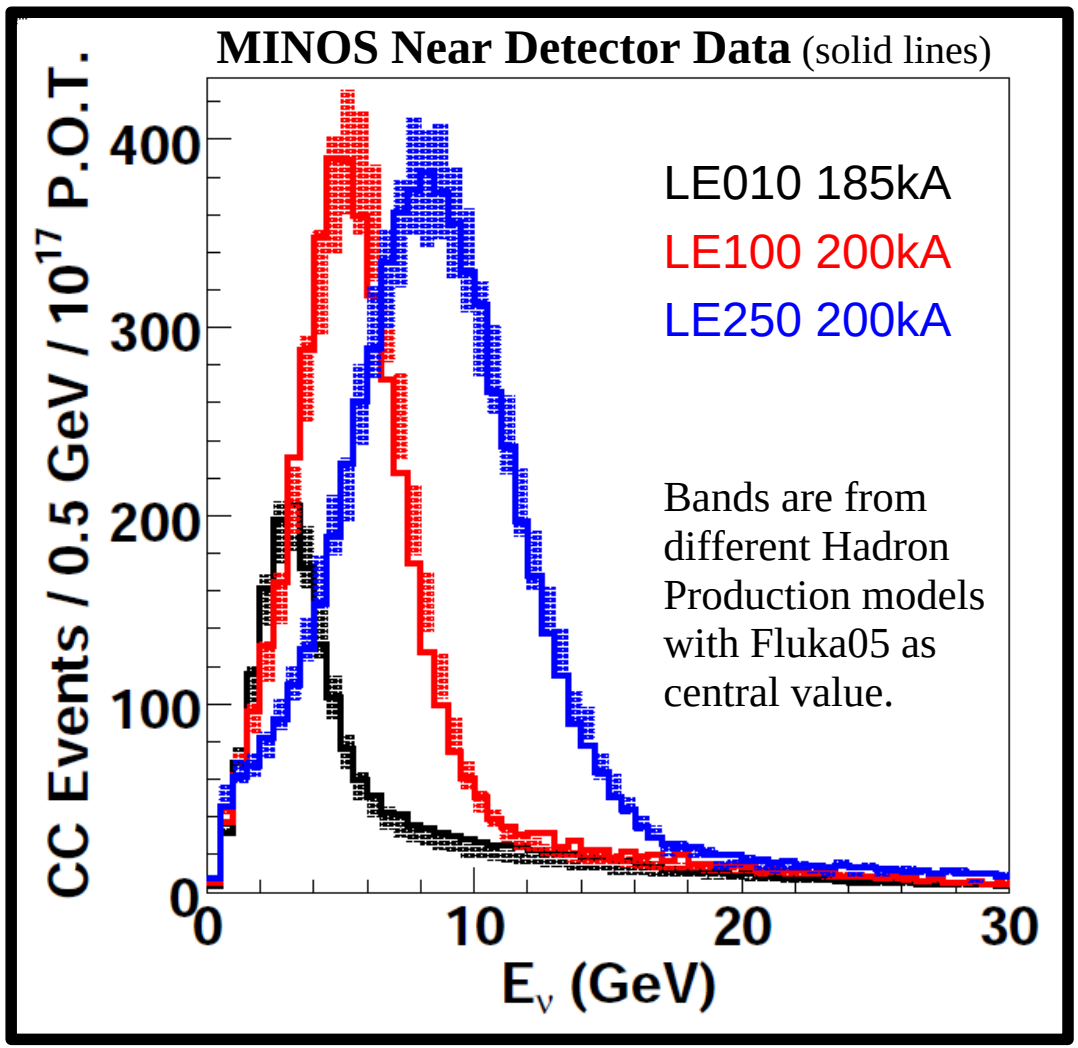


Special Runs

Date	POT Recorded	Live Time	Comments
26-Aug	1.06E+18	96.50%	Start ME FHC Run
27-Aug	1.14E+18	97.40%	
28-Aug	8.62E+17	91.40%	
29-Aug	8.78E+17	95.10%	
30-Aug	1.13E+18	95.90%	
31-Aug	9.72E+17	93.10%	
1-Sep	3.63E+17	87.40%	Down load Firmware
2-Sep	7.77E+17	98.40%	
3-Sep	6.85E+17	93.50%	Start ME RHC Run
4-Sep	1.11E+18	94.00%	
5-Sep	1.07E+18	93.80%	
6-Sep	1.20E+18	92.50%	
7-Sep	9.61E+17	88.60%	DAQ problems
8-Sep	1.69E+17	93.20%	End ME RHC Run
9-Sep	1.78E+17	98.40%	Start HE FHC Run
Total	**1.26E+19**	**93.93%**	

- Thurs, Aug 26 ME FHC when MINOS was fully working
  - 6.7 E18 POT with MINOS operational
- Fri Sep 3 ME RHC
  - Reverse MINOS coil current
  - Roughly 5E18 POT with MINOS operational
- Wed, Sep 8 Move Target to HE with FHC
  - Reverse MINOS coil current
  - Beam started Thur, Sep 9
  - Accumulated about 3E18 POT as of midnight Sep 12

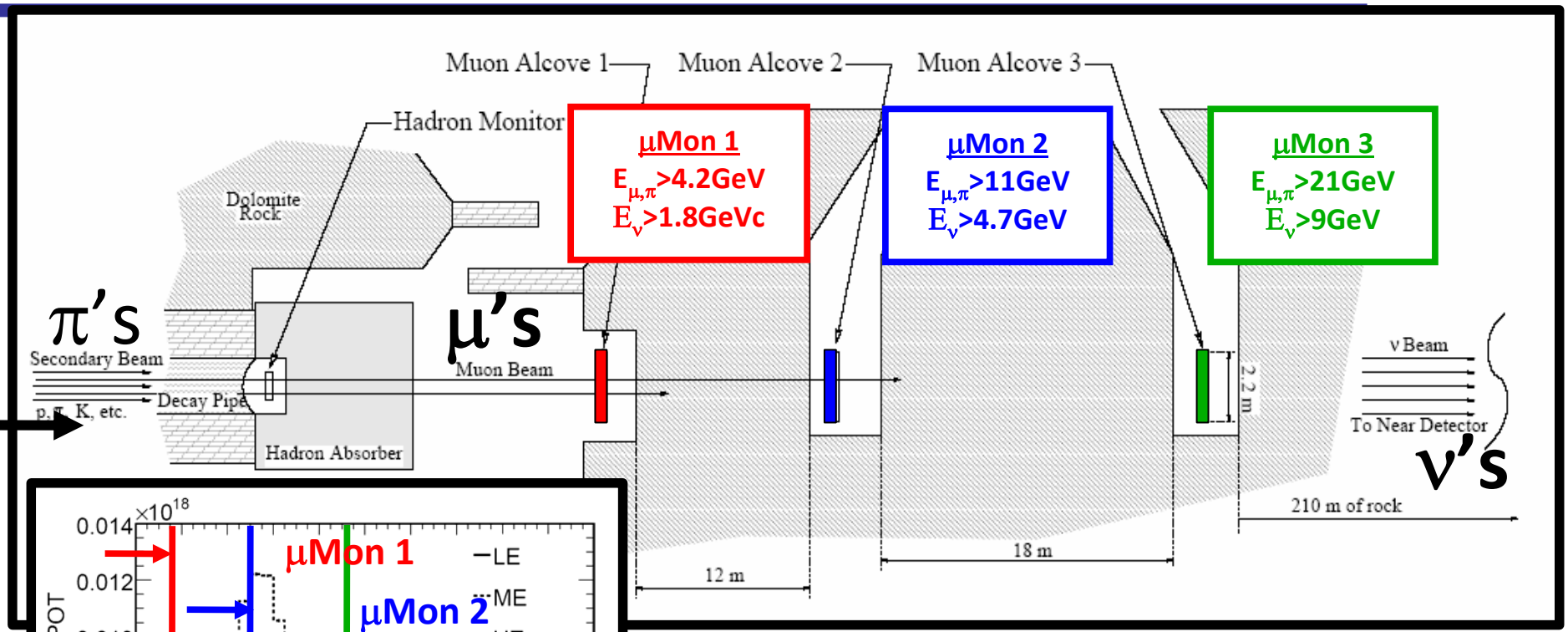
Flux

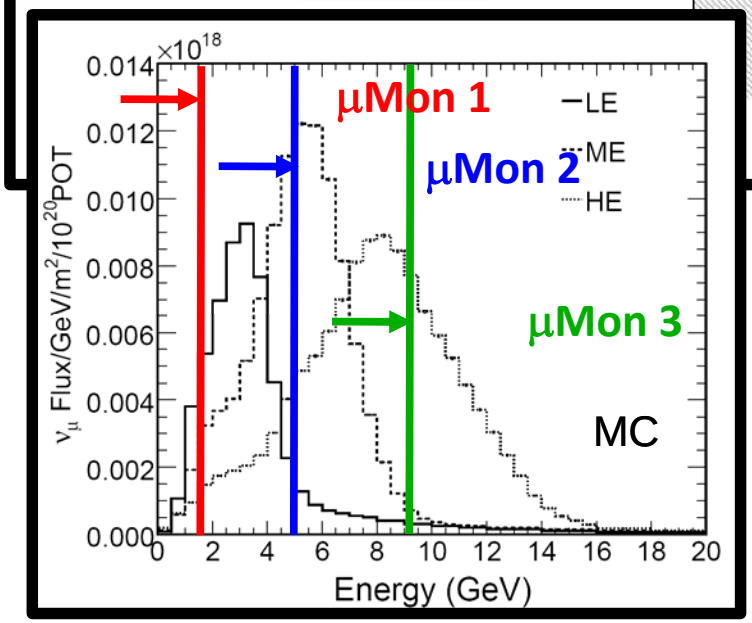


Out of the box Monte Carlo....

- does not agree with data. Data = Flux*Cross Section, MINERνA needs precise Flux measurements.
- has ~30% error due to production of π and K's from the target. Need to constrain Hadron Production to reduce Flux uncertainty.

The ν Flux Using Muon Data



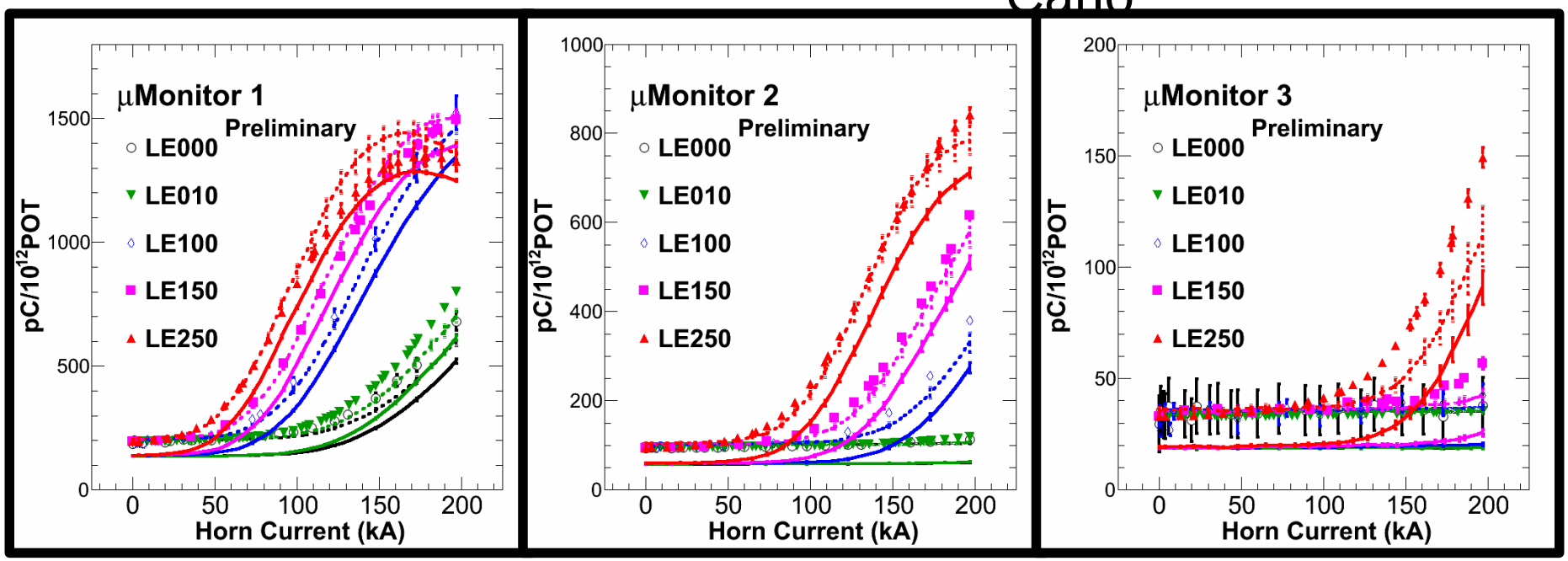


- 3 arrays of ionization chambers.
- Energy thresholds for muons to reach each monitor.
- Varying the target position and the horn current varies the π and K spectrum off the target.
- Sampling μ flux = Sampling hadrons off target = Sampling ν flux.

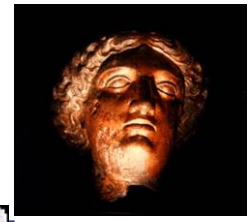
The ν Flux Using Muon Data

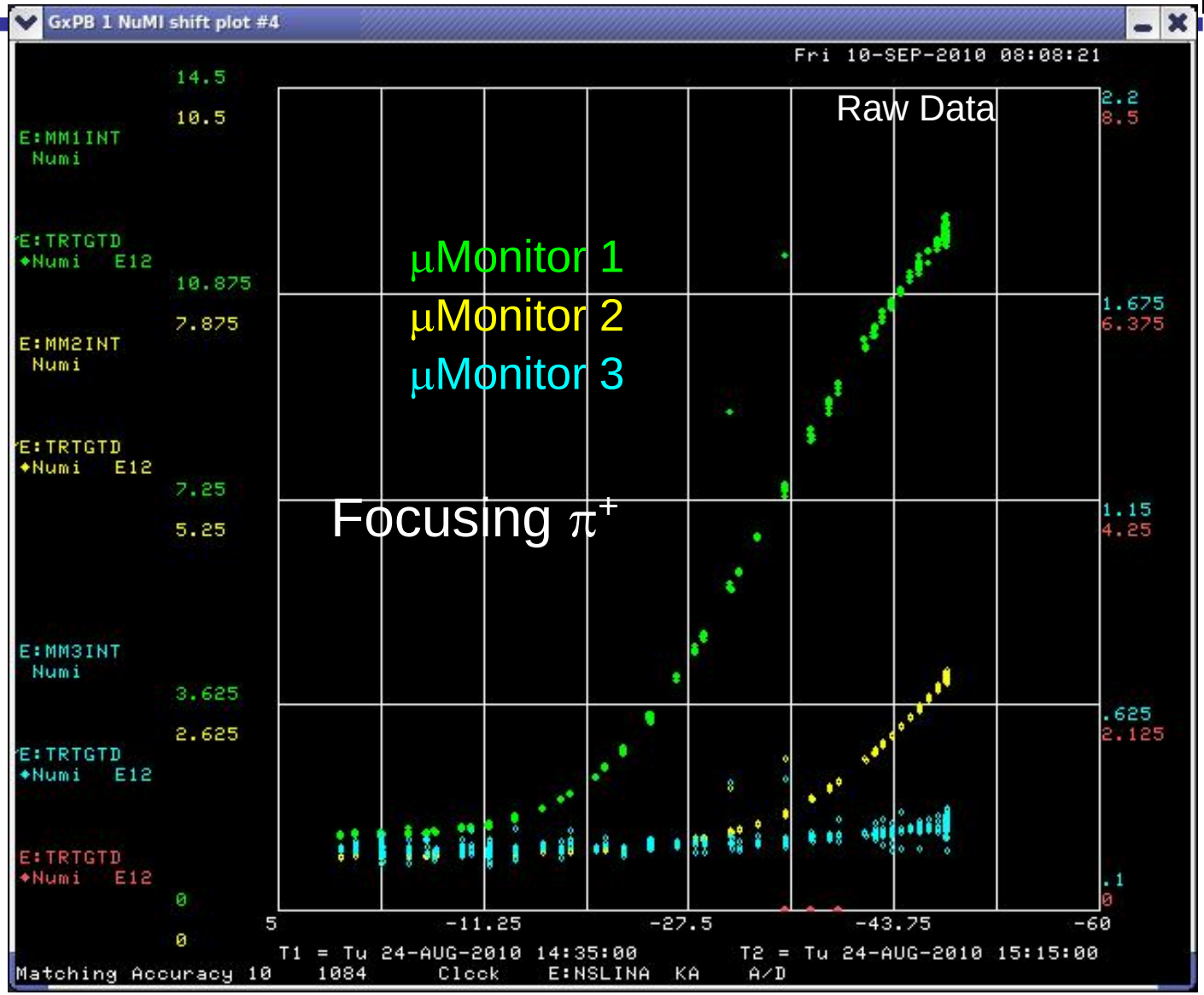
- Vary π and K yields to tune default MC to μ Monitor data.
- Provides a measurement of the μ flux and parent π and K flux and thus the neutrino flux.
- Repeat for MINERVA.

● Data ▬ Monte-Carlo ▪▪▪▪ Tuned Monte-Carlo

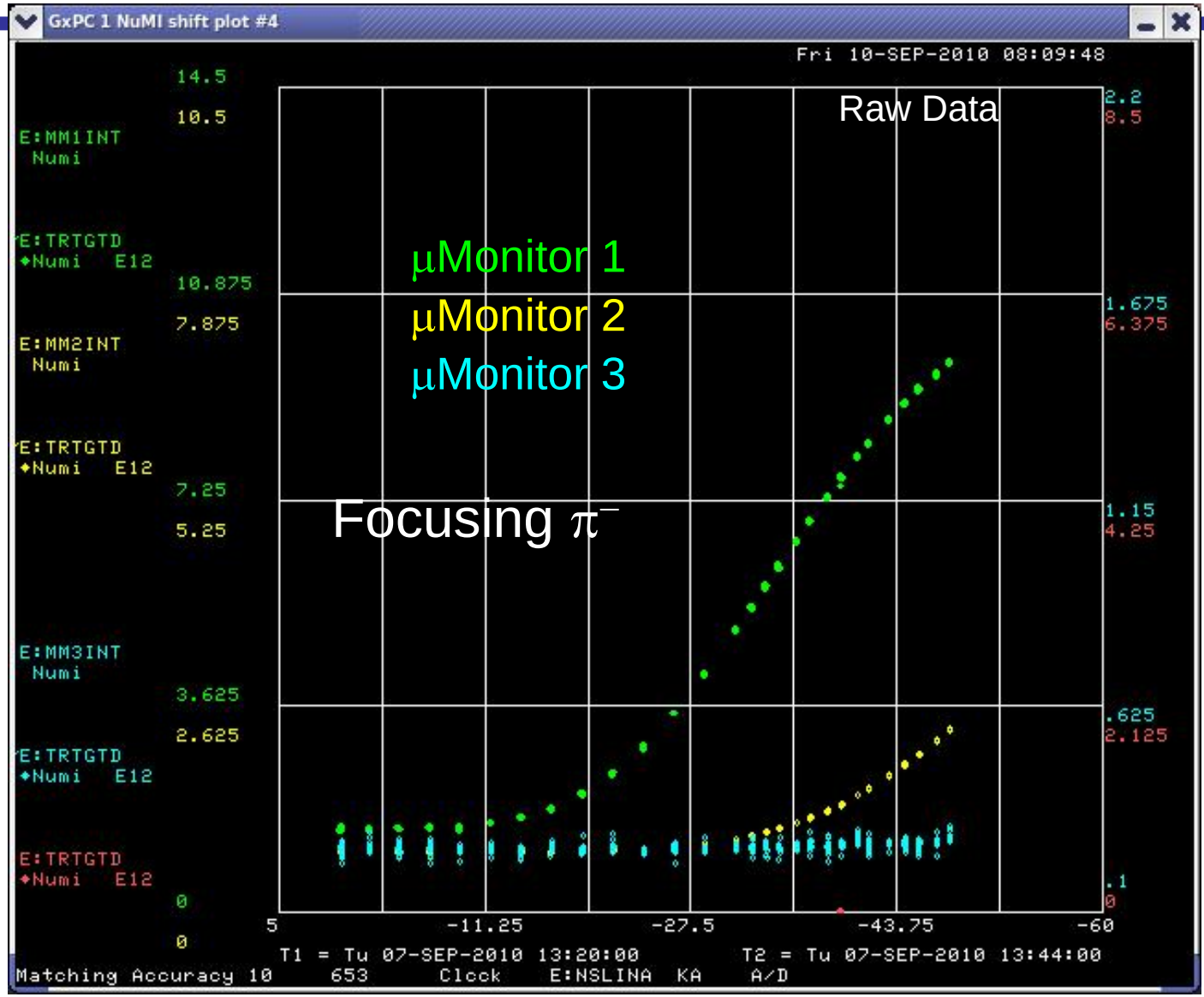


Recent LE100 ν Beam μMonitor Data





Recent LE100 Anti-ν Beam μMonitor Data



Summary

- Understanding the neutrino Flux is very important to MINERVA, a neutrino cross section experiment.

- Special Run Data, in which the target position and the horn current is varied provides critical measurements of the neutrino flux.

- We would like to thank the Accelerator Division for providing the extra effort need to modify the beam line and for these Special Runs

- We would like to thank MINOS for their help and cooperation during these Special Runs.