



Plans for MINOS Near Detector Commissioning

- Overview
- Expert Systems
- Plane Commissioning
- Full System Commissioning

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Director's Review of the
NuMI/MINOS Installation
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Near Detector Commissioning Overview

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- Three main types of Detector Commissioning work
 - Expert sub-system preparation
 - Plane-by-plane commissioning
 - Overall system commissioning
 - Each require
 - General planning of goals and techniques
 - Organization of effort
 - Specific software
 - Prior experience:
 - Far Detector
 - Calibration Detector at CERN
 - Current 9 plane system at New Muon



Expert Systems

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- **Data Acquisition and Front End Electronics**
 - DAQ Expert group arrive in early April (1 expert at FNAL for entire installation)
 - Above ground: Setup all PCs used in system with basic configuration and software
 - Underground: integration of DAQ and Front Electronics
 - * Local Electronics Expertise from Argonne and FNAL
 - * First 2 weeks: hope to cover first 6 weeks worth of planes with spectrometer section
 - * Continue with whole readout as soon as possible
 - **Light Injection, Photomultiplier tubes, Timing**
 - Experts will be present for key phases of each, starting in mid-February, and continuing through May
 - **5-6 experts at most underground during first weeks of plane installation**



New Muon 9 Plane Integration Test

- Development of full procedure for plane hookup
 - Tested on other collaborators
 - 2.5 hours to connect full plane
 - * Includes laying cables
- DAQ system is being provided for these 9 planes
 - Test entire plane commissioning procedure
- Safety:
 - Job Hazard Assessments created and followed by collaborators in all work on detector





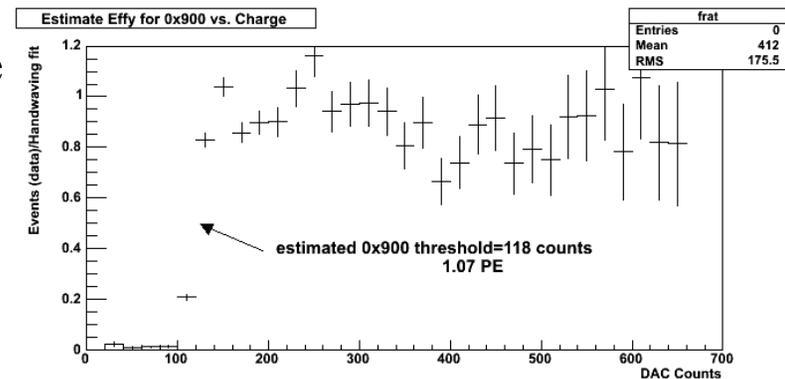
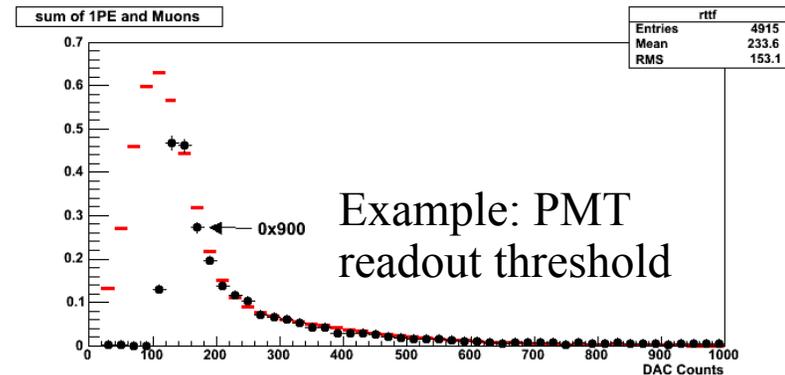
Plane Commissioning

- Goals:
 - connect plane to readout
 - * Optical fibers cables between detector and PMTs
 - basic characterization of plane performance, including readout
 - * Check for light leaks
 - * Basic calibrations: Photoelectron/ADC count
 - * Set PMT thresholds
 - * Look for cosmics
- We will not wait for commissioning to be complete before continuing plane installation
- Shifts of 2-3 collaborators, start with 1 shift/day
 - Mostly non-overlapping with plane installation



Preparations for Plane Commissioning

- New Muon 9 plane system
 - Full hookup procedure worked out
 - * Required tools, time, training
- CalDet at CERN
 - Much experience with Near Detector electronics, phototubes
- Software
 - Online Monitoring:
 - * Basic Near Detector plots exist, more being added
 - CalDet software:
 - * Various packages being revised for NearDet

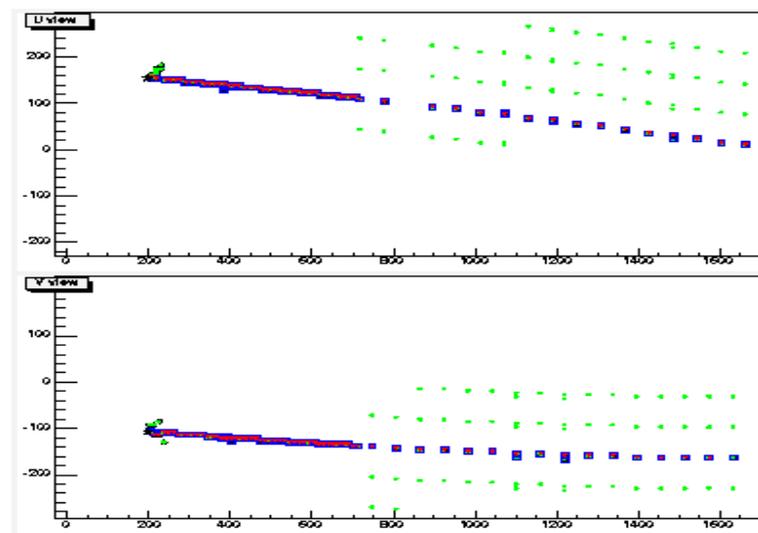




System Commissioning

- Goals under discussion
 - Be Ready to Demonstrate Neutrino Interactions in first minutes of Beam
- Much of MINOS offline software exists
 - Tuning, specific ND bug fixing can be done on real ND data as plane commissioning continues

Reconstruction of
Monte Carlo
Event in Near
Detector





Summary

- Preparedness
 - Valuable experience from FarDet and CalDet
 - * All subsystems have all been used extensively in final or near-final configurations
 - * Specific NearDet readout experience from CalDet
 - * New Muon integration test specific to NearDet planes
- Effort planning for Underground
 - Maximum will be in 1st 2-3 weeks, with up to 5 or 6 Electronics, DAQ, Light Injection, Timing physicist experts underground
 - 1 shift/day of 3 physicist for plane commissioning
 - Physicist effort will mostly not overlap with plane installation (later afternoon and evening)