Dave Schmitz:

Education:

Ph.D., Physics, Columbia University, 2008
B.S., Engineering Physics, University of Kansas, 2001

Employment:

Leon M. Lederman Postdoctoral Fellow, Fermi National Accelerator Laboratory, 2008–Present

Research Activities:

2008–Present - MINERνA neutrino cross-section experiment at Fermilab. MINERνA took first neutrino beam data this summer with a prototype detector and should complete construction of the full detector by April, 2010. As co-convener of the software development group I am responsible for maintenance of the software framework and coordinating the development of analysis tools as we work to understand and calibrate the detector and prepare for the start of the physics run next year.

2008–Present - MicroBooNE Liquid Argon neutrino experiment at Fermilab. MicroBooNE is a 170 ton scale liquid argon TPC neutrino detector which will explore the low energy event excess reported by MiniBooNE, measure neutrino cross-sections on argon at $\approx$1 GeV, and is an important step in the staged approach to understanding the viability of LAr detectors for the future of neutrino oscillation physics. As a co-convener of the cryogenics and purification group we work closely with lab engineering groups to design, cost, and eventually construct the MicroBooNE cryogenic tank and purification systems.

2002–2008 - Booster Neutrino Experiment (MiniBooNE) at Fermilab. In the months prior to analyzing the electron neutrino data at MiniBooNE, I worked to develop fitting algorithms to search for potential evidence of $\nu_\mu \rightarrow \nu_e$ oscillations. These tools were used to quantify the impacts of systematic errors on the experimental sensitivity to oscillations prior to unblinding. Upon unblinding and fitting the data in March of 2007 no evidence for $\nu_\mu \rightarrow \nu_e$ oscillations in the $\Delta m^2 \sim 1 eV^2$ region was seen.

2002–2007 - Hadron Production Experiment (HARP) at CERN. After visiting CERN to collect data in 2002, I developed an analysis to extract the absolute production cross-sections of π^+, π^- and protons using the HARP forward spectrometer ($\theta \leq 210$ mrad). This analysis provided the hadron production data needed by the Booster neutrino beam at Fermilab (8.9 GeV/c protons on beryllium) and the KEK neutrino beam used in the K2K disappearance experiment in Japan (12.9 GeV/c protons on aluminum).