**Joel Allen Mousseau, Ph.D.**

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**Education**

* PhD Particle Physics, University of Florida, Gainesville FL August 2015
  + Supervisor Professor Heather L. Ray
  + Thesis title: *First Search for the EMC Effect and Nuclear Shadowing in Neutrino Nucleus Deep Inelastic Scattering at MINERvA*
* B.S. Honors physics, minor in mathematics. University of Michigan, May 2007

Ann Arbor MI

**Awards and Honors**

* University of Florida College of Arts and Sciences Graduate Travel Award. Spring 2014
  + Funding awarded for travel to conferences for presenting original research.
* Miami 2010 Student Software Award. December 2010
  + Sponsored by MathWorks, awarded to outstanding student speakers speaking at Miami 2010.
* Bernard and Mary Donnelly memorial scholarship. May 2003
  + Scholarship for four years of undergraduate studies awarded to two outstanding high school seniors per year with a parent employed with Donnelly.
* Magna scholarship. May 2003
  + Scholarship for four years of undergraduate studies in a field related to industrial processes awarded to outstanding high school seniors with a parent employed with the Magna corporation.

**Research Experience**

* Postodcoral researcher on MicroBooNE and SBND experiments. 2015 to present
  + Supervisor Professor Joshua Spitz
  + Co-convenener of Data Management and Production group.
  + Responsible for the production of Monte Carlo simulation samples (MC) for the entire MicroBooNE experminet.
  + Worked with Fermilab scientists and members of the scientific computing division (SCD) on improving production workflows for the production of MC and the analysis of data. This work led to about a factor of 2 increase in production speed.
  + Actively developing a low-cost solution for the digitization of silicon photomultipliers (SiPM) signals based on commercial ultrasound ADC chips for the SBND and DUNE experiments.
  + Analyzing MicroBooNE PMT data for long-lived scintillation light in an effort to explain single photoelectron rates.
* Graduate Research assistant on MINERvA and MiniBooNE experiments. 2008 to 2015
  + Supervisor Professor Heather Ray
  + Performed a measurement of deep inelastic scattering using MINERvA low energy neutrino data set. Compared ratios of differential cross sections to search for unknown and groundbreaking nuclear effects in the weak sector. Analysis published in PRD.
  + Extensively worked on validating the MINERvA implementation of the GENIE neutrino event generator. This work was instrumental in publishing MINERvA's first nuclear target analysis.
  + Adapted GENIE to implement alternative nuclear models by directly working with GENIE code and utilities. This work was instrumental in publishing MINERvA's first nuclear target analysis.
  + Responsible for the calibration, simulation characterization, monitoring, installation, and efficiency measurements of the MINERvA veto wall system. Currently on-site expert for veto wall.
  + Developed software for matching tracks in the MINERvA main detector to events in the veto wall, substantially before it was required for physics measurements.
  + Worked extensively on the construction, installation, commissioning, and calibration of the MINERvA main detector and light injection system.
  + Solely responsible for one of two anti-neutrino oscillation searches with the first MiniBooNE anti-neutrino data set. Published in Phys. Rev. Lett, 103.
* Undergraduate thesis research. 2005 to 2007
  + Supervisor Professor L. Pando-Zayas.
  + Derived differential equations of motion from a string theory generated Lagrangian.
  + Attempted to solve non-linear differential equations of motion for black hole type solutions using various analytic and numeric methods.
  + Compiled research into honors thesis.

**Recent Invited Talks and Seminars Given**

* *Neutrino-nucleus Deep Inelastic Scattering with MINERvA*.
  + 10th International Workshop on Neutrino-Nucleus Interactions in the Few-GeV Region. Osaka, Japan. Nov. 2015.
* *First search for EMC Effect and Shadowing in Neutrino Scattering at MINERvA.*
  + Fermilab Joint Experimental-Theoretical Physics Seminar. May 2015
* *Neutrino Nucleon Deep Inelastic Scattering*
  + XXIII International Workshop on Deep-Inelastic Scattering and Related Subjects. Dallas, TX. April 2105.
* *Charged-Current Inclusive Cross Section Ratios with θμ < 17º at MINERvA.*
  + 9Th International Workshop on Neutrino-Nucleus Interactions in the Few GeV Region. London, United Kingdom. May 2014.
* *Recent Results and Future Directions of the MINERvA Experiment.*
  + XXIV Workshop on Weak Interactions and Neutrinos. Natal, Brazil. Sep. 2013.
* Organizer of New Perspectives 2011, a conference focusing on high energy, nuclear and astrophysics geared toward younger scientists.
  + Fermilab, Batavia IL.
  + <https://indico.fnal.gov/event/NP2011>.

**Selected Publications:**

* J. Mousseau, M. Wospakrik, et al. *Measurement of Partonic Nuclear Effects in Deep-Inelastic Neutrino Scattering using MINERvA.* Phys. Rev. D **93** (2016).
* B. Tice, M. Datta, J. Mousseau et al., *Measurement of Ratios of* *ν**μ Charged-Current Cross Sections on C, Fe, and Pb to CH at Neutrino Energies 2-20 GeV.* Phys. Rev. Lett., 112 (2014).
* L. Aliaga et al., *Design, calibration, and performance of the MINERvA detector.* Nuclear Instruments and Methods in Physics Research Section A, Vol. 743 (2014)*.*
* A. A. Aguilar-Arevalo et al., *A Search for Electron Antineutrino Appearance at the Delta m\*\*2 ~ 1-eV\*\*2 Scale.* Phys. Rev. Lett., **103** (2009).