

Curriculum Vitae

Minerba Betancourt

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Education

- 2009-2013 Ph. D. in Physics, University of Minnesota, Minneapolis, MN.
- 2005-2008 Ph. D. Graduate Student, Florida Atlantic University, Boca Raton, FL.
- 2003-2005 M. Sc. in Physics, Universidad de Los Andes, Merida - Venezuela.
- 1996-2002 Licenciatura en Fisica (B. Sc.), Universidad de Los Andes, Merida - Venezuela.

Employment

- 2013-present Research Associate, Fermi National Accelerator Laboratory.
- 2011-2013 Research Assistant in the Department of Physics at University of Minnesota.
- 2010 Teaching Assistant in the Department of Physics at University of Minnesota.
- 2005-2008 Teaching Assistant in the Department of Physics at Florida Atlantic University.
- 2004 Instructor of Mathematics in the Faculty of Engineering at Universidad de Los Andes.
- 2002-2004 High School Teacher in the High School Luis Enrique Marquez Barilla.
- 1999-2002 Teaching Assistant in the Department of Physics at Universidad de Los Andes.

Awards and Academic Recognition

- 2012-2013 University of Minnesota Doctoral Dissertation Fellowship, academic year 2012-13.
- 2011-2013 Elected by the NO ν A collaboration as the young representative of the NO ν A Executive Committee.
- 2011 University Research Association Visiting Scholars Program award to work on NO ν A at Fermilab for one year.
- 2001 Outstanding academic performance, Faculty of Sciences, Universidad de Los Andes.
- 2000 Luis Maria Ribas Davila. Recognition of outstanding academic performance, Universidad de Los Andes.
- 1999 Outstanding academic performance, Faculty of Sciences, Universidad de Los Andes.

Research Summary

- 2013-present Measuring the charged current Quasi-elastic (CCQE) neutrino differential cross section ratios on different nuclei in the MINERvA experiment. Study of the final state interaction for the CCQE interactions, specifically a sample where the proton is identified and the muon is analyzed in the MINOS near detector. Fermilab National Laboratory.
- 2009-Spring 2013 Thesis: Study of neutrino CCQE interactions in the NOvA Near Detector Prototype. I helped assemble and commissioning the Near Detector Prototype at Fermilab. Assembly of the modules for the NOvA Near Detector Prototype at the factory of the University of Minnesota. Advisor: Prof. Kenneth Heller. University of Minnesota.
- Summer 2008 Study of a pre-selection cut based on contiguous planes for the electron neutrino appearance analysis in MINOS, in order to remove data and Monte Carlo differences as well as Far detector and Near detector differences. This cut has been adopted by the group for the final analysis. This work was done with Prof. Mayly Sanchez (Harvard University/Argonne National Laboratory) and Prof. Hugh Gallagher (Tufts University).
- Summer 2007 Review of aspects related to Hawking Radiation associated with black hole formation. Supervisor: Dr. Emil Mottola. Los Alamos National Laboratory.
- 2005 M. Sc. Dissertation: On Duality for mass and massless particles of spin 2. Study of dual equivalence for two theories that describe spin 2 with mass. Study of self duality of massless spin 2, using dimensional reduction of dual action for Curtright and Fierz-Pauli in five dimensions. Advisor: Prof. Adel Khoudeir. Universidad de Los Andes.
- 2002 B. Sc. Dissertation: On dual equivalence between massive topologically and self dual theories in seven dimensions. The dimensional reduction of these theories leads to the different dualities for massive antisymmetric fields in four dimensions. Advisor: Prof. Adel Khoudeir. Universidad de Los Andes.

Publications

- T. Walton, M. Betancourt *et al.* [MINERvA Collaboration], "Measurement of muon plus proton final states in ν_μ interactions on hydrocarbon at $\langle E_\nu \rangle = 4.2$ GeV," *Phys. Rev. D* **91** (2015) 7, 071301
- A. Higuera *et al.* [MINERvA Collaboration], "Measurement of Coherent Production of π^\pm in Neutrino and Antineutrino Beams on Carbon from E_ν of 1.5 to 20 GeV," *Phys. Rev. Lett.* **113** (2014) 26, 261802
- M. Betancourt [MINERvA Collaboration], Proceedings, "Quasi-Elastic Scattering and Pion Production at MINERvA, FERMILAB-CONF-14-506-ND, (2014).
- B. G. Tice *et al.* [MINERvA Collaboration], "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**, no. 23, 231801 (2014).
- M. Betancourt [NOvA Collaboration], Proceedings, "Early Neutrino Data in the NOvA Near Detector Prototype," arXiv:1109.6692 [hep-ex].
- P. Adamson *et al.* [MINOS Collaboration], "Improved search for muon-neutrino to electron-neutrino oscillations in MINOS," *Phys. Rev. Lett.* **107**, 181802 (2011)
- P. Adamson *et al.* [MINOS Collaboration], "New constraints on muon-neutrino to electron-neutrino transitions in MINOS," *Phys. Rev. D* **82**, 051102 (2010)

- P. Adamson *et al.* [MINOS Collaboration], "Search for muon-neutrino to electron-neutrino transitions in MINOS," *Phys. Rev. Lett.* **103**, 261802 (2009)
- M. Betancourt and A. Khoudeir, About the duality for spin 2, *Ciencia*, V 16, N3, pp338-343 ISSN 1315-2076 (2008).
- M. Betancourt and A. Khoudeir, "Topological mass in seven dimensions and dualities in four dimensions," *Mod. Phys. Lett. A* **20**, 1619 (2005)
- M. Betancourt and A. Khoudeir, "Dualidad masiva en siete dimensiones," *Revista Mexicana de Fisica*, V 52 N3 (2005).

Presentations and Collaboration Activities

Talks

- The MINERvA Experiment. Talk presented at Workshop on the Intermediate Neutrino Program WINP2015, Brookhaven National Laboratory, February (2015).
- Quasi-Elastic Scattering and Pion Production at MINERvA. Talk presented at Moriond QCD and High Energy Interactions, La Thuile, Aosta Valley, Italy, March (2014).
- Status of Quasi-elastic Studies in the NOvA Near Detector Prototype. Talk presented at New Perspectives 2012, Fermilab, Chicago, June 14, (2012).
- Early Neutrino Data in the NOvA Near Detector. Talk presented at DPF Meeting, Brown University, Providence, Rhode Island, (2011).
- Early Neutrino Data in the NOvA Near Detector. Talk presented at APS March Meeting, Dallas, TX, (2011).
- Dual equivalence between massive topologically and self theories in seven dimensions. Talk presented at IV Congreso de la Sociedad Venezolana de Fisica, Margarita-Venezuela, (2003).

Posters

- Study of Quasi-elastic Scattering in the NOvA Near Detector Prototype. Poster presented at NuInt12, Rio de Janeiro, Brazil 22-27 October (2012).
- Neutrino Data in the NOvA Near Detector. Poster presented at Fermilab Users' Meeting, June 1-2, (2011).
- Duality for Spin 2, presented at V Congreso de la sociedad Venezolana de Fisica, Luis-Nucleo Punto Fijo-Venezuela, (2005).

Collaboration Activities

2014-present Co-convenor of the Exclusive Physics analyses in the MINERvA experiment.

2011-2013 Young representative member of the NOvA Executive Committee.

2009 Founding member of the group of graduate student and young postdoctoral fellows known as young NOvA.