

Eric W. Grashorn, Ph.D.

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Skilled analyst with 10 years experience solving a broad range of longstanding problems in experimental physics and finance through statistical analysis and modeling of large data sets. Attacks complex problems readily transferable to industry applications with the ability to effectively communicate results. Detail oriented analyst who effortlessly collaborates, with demonstrated ability to lead cross-functional teams.

WORK EXPERIENCE **J.P. Morgan Chase, *Vice President, Statistical Modeling*** **2011-present**

- Mined monthly snapshot of national home lending activity to develop marketing intelligence
- Developed title search algorithm using County Courthouse deed records
- Prioritized debt collection resources using Machine Learning algorithms

Ohio State University, *Post Doctoral Researcher* **2008 - 2011**

Antarctic Impulsive Transient Array (ANITA)

NASA funded balloon borne radio interferometer designed to detect cosmic neutrinos.

- Used C++ to develop model of light transmission through rough surfaces at greater than the critical angle.
- Lead team to make first wideband measurement of radio emission from cosmic rays.
- Designed high-efficiency triggering system for broadband RF system.

Air-shower Molecular Bremsstrahlung Radiometer (AMBER)

Experiment using satellite television equipment to detect microwave emission from cosmic rays.

- Developed C++ simulation of microwave emission from nuclear cascades.
- Deployed microwave reflector-feedhorn-amplifier system in the field.

Radio Extensive Airshower Simulation (REAS)

Simulation of radio emission from electromagnetic showers induced by cosmic ray nuclei.

- Extended existing simulation to cover wider geometry and frequency range.

Pierre Auger Observatory

Largest cosmic ray observatory in the world at 3,000 km², located in Mendoza, Argentina.

- Performed statistical analysis to determine the mass of incoming cosmic ray nuclei.
- Measured proton-air cross section at higher energies than laboratory capabilities.

Dissertation Supervision

- Provided guidance and advised PhD students on the direction of their research.
- Reviewed and edited manuscripts of PhD students.

Conference Organization

Highest Energy Hadronic Interactions Workshop, *Ohio State University, April 8, 2010.*

Center for Cosmology and Astroparticle Physics Symposium, *Ohio State University, October 12-14, 2009*

- Secured grant funding to pay for attendee travel and accommodations.
- Facilitated presentations and conference discussions.

University of Minnesota, *Research Assistant* **2004 - 2008**

Main Injector Neutrino Oscillation Search (MINOS)

Neutrino experiment with beam and near detector at Fermilab, far detector at Soudan, MN.

- Resolved problem of kaon production in cosmic ray induced nuclear cascades using statistical correlation of particle data with atmospheric temperature variations.
- Used Maximum Likelihood method to measure cosmic ray deficit to investigate interplanetary magnetic field.
- Performed statistical analysis to discover extragalactic neutrino production.

WORK
EXPERIENCE
(CONT'D)

University of Minnesota, Teaching Assistant **2003 - 2007**

- Lead introductory algebra & calculus based Physics Labs.
- Instructed recitation sessions and individualized tutoring.

The Arts Place, Guitar Instructor **2002 - 2003**

- Instructed beginning through advanced students, from ages 5 - 50.

Ball State University, Research Assistant **2001 - 2003**

- Developed method using calcium filters to perform wide-field red dwarf star surveys.
- Performed observations of red dwarf stars at Lowell Observatory, Flagstaff, AZ.

EDUCATION

University of Minnesota, Ph.D., Physics **June 2008**

Dissertation Title: "Particle Astrophysics with the MINOS Far Detector"

Advisers: Prof. Marvin L. Marshak, Prof. Alec T. Habig

University of Minnesota, M.S., Physics **August 2005**

Thesis Title: "Search for a Cosmic Ray Point Source with the MINOS Far Detector"

Adviser: Prof. Alec T. Habig

Ball State University, B.S., Physics **June 2003**

Research Project: "Luminosity Classifications of Low-Mass Red Stars"

TECHNICAL
EXPERTISE

Computing: C/C++, R, ROOT, Matlab, Mathematica, Perl, Fortran, Make,
Unix Scripts, SAS, SQL

Analysis: Statistical analysis of large data sets, multivariate analysis, machine learning

Hardware: Microwave RF systems

Simulations: Geant4, Corsika, REAS, NECREF

Other: Unix/Linux, Windows, L^AT_EX, MS Excel, Word, Powerpoint

Batch: PBS, condor

LEADERSHIP
EXPERIENCE

University of Minnesota Council of Graduate Students **2007 - 2008**

Vice President for Internal Relations

- Wrote official publications.
- Organized Graduate School orientation.

University of Minnesota Physics Grad Student Organization **2006 - 2008**

Officer

- Organized mentoring program, social events.

AWARDS,
AFFILIATIONS

R.D. and H.T. Miller Scholarship Ball State University 2002

American Physical Society; Divisions of Particles and Fields, Astrophysics

PUBLICATIONS &
PRESENTATIONS

Published 26 articles in leading peer-reviewed journals, demonstrated ability to choose problems of wide interest and ability to carry those projects to completion, contributing to a variety of fields. Represented collaborators at numerous international conferences,

invited to discuss work at leading research institutions around the world. Partial publication/presentation list attached, full list available upon request.

REFEREED
PUBLICATIONS

“Observation in the MINOS far detector of the shadowing of cosmic rays by the sun and moon,” Adamson, P. *et al.*, The MINOS Collaboration, *Astropart. Phys.* **34**, 457-466. (2011)

“Observation of ultra-high-energy cosmic rays with the ANITA balloon-borne radio interferometer,” Hoover, S. *et al.*, The ANITA Collaboration, *Phys. Rev. Lett.* **105**, 151101. (2010)

“Observation of muon intensity variations by season with the MINOS Far Detector,” Adamson, P. *et al.*, The MINOS Collaboration, *Phys. Rev. D* **81** 012001. (2010)

“The atmospheric charged kaon/pion ratio using seasonal variation methods,” Grashorn, E. W. *et al.*, *Astropart. Phys.* **33** 140-145. (2010)

“Sudden stratospheric warmings seen in MINOS deep underground muon data,” Osprey, S. *et al.*, The MINOS Collaboration, *Geophys. Res. Lett.* **36** L05809. (2009)

PUBLIC
PRESENTATIONS

“Atmospheric Physics Underground: MINOS and Beyond,” Invited Seminar, Laboratori Nazionali del Gran Sasso, Italy, October 12, 2010

“ANITA and the Highest Energy Cosmic Rays,” XXIV International Conference on Neutrino Physics and Astrophysics (Neutrino 2010), Athens, Greece, June 14-19, 2010

“An Overview of the ANITA Experiment,” AAS High Energy Astrophysics Division, Kona, HI, USA, USA, March 1-4, 2010

“The Nature of Horizontally Polarized Events in ANITA 1: MC Simulations,” APS April Meeting, Washington, DC, USA, February 13-16, 2010

“Astroparticle Physics with the MINOS Far Detector,” 31st International Cosmic Ray Conference (ICRC 2009), Lodz, Poland, July 7-15, 2009

“An Overview of the ANITA Experiment,” 44th Recontres de Moriond, La Thuile, Italy, February 1-8, 2009

“Cosmic Rays at MINOS: Physics in the Background,” High Energy Seminar, University of Notre Dame, Notre Dame, IN, USA, February 26, 2008