Tao Qian, Ph.D.

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Current Position

Post-doctoral Research Associate at Department of Physics and Astronomy at **University of Pennsylvania, 2007 -** prsent

Education:

Ph. D. Physics, University of Minnesota, 2006
M. E. E. Electrical Engineering, University of Minnesota, 2004
M. S. Physics, Beijing University, China, 1997
B. S. Physics, Beijing University, China, 1994

Professional Experiences:

2007-present, Post Doctoral Research Associate at Department of Physics and Astronomy at University of Pennsylvania

Working on gravitational weak lensing and supernova science on Dark Energy Survey project. Focusing on developing weak lensing data processing pipeline and analysis software, and supernova searching software.

2006-2007, Post Doctoral Research Associate at Department of Physics at University of Illinois at Urbana-Champaign

Designing and programming the higher end image data acquisition system that controls the front-end electronics in CCD readout system for the Dark Energy Survey project. Debugged and tested the lower level image acquisition system MONSOON.

2005-2006, Research Assistant at Experimental High Energy Physics Group at University of Minnesota on the Cryogenic Dark Matter Search Experiment

Performed GEANT4 simulation to study the background in the CDMS semiconductor detector

2001-2006, Research Assistant at Experimental High Energy Physics Group at University of Minnesota on Muon g-2 Experiment

Conducted a full analysis using all data collected for the Muon g-2 experiment to precisely measure the lifetime of both positively and negatively charged muons up to 70 part per million accuracy. The dilated lifetime of muons was extracted by fitting the exponential decay time spectra. Developed a novel simulation model to determine the muon momentum distribution inside of the storage ring, which provides a ten times better precision than existing methods. Completed extensive systematic error analysis for the two data runs.

Installed and tested two-dimensional hodoscope of plastic scintillators with embedded wavelength shifting fiber. Maintained online data analyzer software for the g-2 Data Acquisition system, and wrote online (web) monitoring program for the hodoscope detectors. Developed Monte Carlo simulation for the proposed Muon Neutrino Mass Experiment, took the test run and conducted data analysis.

Administrated the computer systems for Minnesota muon g-2 analysis Linux Cluster (redhat Linux).

2002-2004, Master Degree in Electrical Engineering University of Minnesota

Specialized on digital image processing, digital signal processing, and digital communication. One of the projects was to analyze the ultrasonic echo signals reflected from a vibrating target by using correlation processing and end-point detection methods.

1997-1999, Lecturer and Researcher, Department of Technical Physics, Beijing University, China

1994-1997, Master Degree and Research Assistant at Department of Technical Physics, Beijing University, China

Computer skills:

- Program languages: C/C++, FORTRAN, HTML, Perl
- Analysis tools: C++ based analysis framework ROOT, Matlab
- System administrator: Redhat Linux, Windows NT

Publications:

- "Search for Lorentz and CPT Violation Effects in Muon Spin Precession", G. W. Bennett et al., Phys. Rev. Lett. 100, 091602 (2008)
- "Statistical equations and methods applied to the precision muon (g-2) experiment at BNL", G. W. Bennett et al., NIM in Physics Research A 579 (2007)
- "Final report of the E821 muon anomalous magnetic moment measurement at BNL", G. W. Bennett et al., Physical Review D73, 072003 (2006)
- "Measurement of the Negative Muon Anomalous Magnetic Moment to 0.7 pm", G.W. Bennett et al., Physical Review Letters 92, 161802 (2004).
- "Measurement of the Positive Muon Anomalous Magnetic Moment to 0.7 ppm", G.W. Bennett et al., Physical Review Letters 89, 101804 (2002).
- "Non-equilibrated Emission of Intermediate-Mass Fragments", Qian Tao et al., Chinese Physics Letters Vol. 15 No. 4 (1998) pp255-257
- "Evaporation of Intermediate-Mass Fragments", Qian Xing et al., High Energy Physics, Vol. 20, No. 4 (1996) pp304-310

Teaching Award:

Outstanding Teaching Assistant Award during the 2003-2004 academic year in the Physics Department, University of Minnesota