CURRICULUM VITAE

Contact Information

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Education

- **Duke University, Durham, NC** (2005 - 2008)
  Ph.D. degree in Physics, August 2008
  Thesis title: "^{3}He Relaxation Time Measurements At Low Temperatures For The Neutron Electric Dipole Moment (nEDM) Experiment"
  Thesis advisor: Professor Haiyan Gao
- **Duke University, Durham, NC** (2002 - 2005)
  M. A. degree in Physics, May 2005
- **Nanjing Univesity, Nanjing, China** (1998 - 2002)
  B. S. degree in Physics, June 2002

Awards and Honors

- Henry W. Newson Fellowship at Duke University, 2007
- People's Scholarship at Nanjing University, 1999, 2000, 2001

Professional Experience

- **Duke University, Durham, NC** (07/2010 - Present)
  Research Scientist in Physics Department.
- **Duke University, Durham, NC** (09/2008 - 06/2010)
  Postdoctoral Associate in Physics Department.
- **Duke University**
  Research Assistant, 2003 - 2008
- **Duke University**
  Teaching Assistant, 2002 - 2003
- **Nanjing University, Nanjing, China**
  Research Assistant, 2001 - 2002

Professional Societies

- Member of American Physical Society

Professional Activities

- Duke University, working on developing the high-pressure polarized ^{3}He target for the High Intensity Gamma Source (HIγS) facility at the Duke Free Electron Laser Laboratory (DFELL). The ^{3}He target can be used to test the state-of-the-art three body calculations, the GDH sum rule for ^{3}He from the 2-body breakup threshold to the pion threshold and to measure the neutron polarizabilities through Compton scattering experiment.

- Duke University & Los Alamos National Lab, working on the "Injection Test" of the nEDM experiment. The purpose of the injection test is to demonstrate that $\sim$100% polarized ^{3}He atoms can be injected from the atomic beam source (ABS) and collected in the collection volume with negligible polarization loss. This experiment is going to be carried out in Los Alamos National Laboratory.

- Duke University, studying the geometric phase effect in the nEDM experiment. This is the systematic uncertainty that arises from the interaction of the $\vec{v} \times \vec{E}$ field with the external magnetic field gradients.

- Duke University, working on the Superconducting QUantum Interference Device (SQUID) system for the nEDM experiment. The purpose is to measure the ^{3}He precession signal in an extremely diluted ^{3}He-^{4}He solution ($\chi \sim 10^{-10}$) at cryogenic temperatures so that polarized ^{3}He can serve as a co-magnetometer during the nEDM measurement period.

- Duke University, studying polarized ^{3}He relaxation in ^{3}He-^{4}He mixtures below the ^{4}He lambda point (at 1.9 K and 400 mK) in dTPB-dPS coated acrylic cells for the nEDM experiment using cryostats and a dilution refrigerator.

  Thesis: http://www.tunl.duke.edu/~mep/thesis/yqPhDthesis.pdf

- Summer School on Fundamental Neutron Physics, University of Tennessee, 6/4 - 6/10, 2006.

- Los Alamos National Laboratory, working with Steve Lamoreaux on Atomic Beam Source, 6/20 - 6/27, 2006.

- NIST, working with Sergei Dzhosyuk, Liang Yang *et al.* in neutron lifetime measurement group, November 2003.

Publications

- "First Study of Three-body Photodisintegration of ^{3}He with Double Polarizations", X. Zong, W. Chen, M. W. Ahmed, M. Busch, H. Gao, S. Henshaw, J. Li, S. F. Mikhailov, B. A. Perdue, X. Qian, P. Seo, S. Stave, C. Sun, H. R. Weller, Y. K. Wu, Q. Ye, W. Zheng, X. Zhu, R. Lu, submitted to Phy. Rev. C, March, 2010.

- "A General Solution to the Diffusion Induced Transverse and Longitudinal Relaxation in a Non-uniform Magnetic Field with Constant Field Gradient", W. Zheng, H. Gao, J.-G. Liu, Q. Ye, C. Swank, submitted to Phy. Rev. A, March, 2010.

- "A High Pressure Polarized ^{3}He Gas Target for Nuclear Physics Experiments using a Polarized Photon Beam", **Q. Ye**, G. Laskaris, W. Chen, H. Gao, W. Zheng, X. Zong, T. Averett, G. D. Cates, W. A. Tobias, Eur. Phys. J. A, **44**, 55-61 (2010).

- "Relaxation of Spin Polarized ^{3}He in Mixtures of ^{3}He and ^{4}He at about 330 mK", **Q. Ye**, H. Gao, W. Zheng, D. Dutta, F. Dubose, R. Golub, P. Huffman, C. Swank, E. Korobkina, Phys. Rev. A, **80**, 023403 (2009).

- "Relaxation of spin polarized ^{3}He in mixtures of ^{3}He and ^{4}He below the ^{4}He lambda point", **Q. Ye**, D. Dutta, H. Gao, K. Kramer, X. Qian, X. Zong, L. Hannelius, R. D. McKeown, B. Heyburn, S. Singer, R. Golub, E. Korobkina, Phys. Rev. A, **77**, 053408 (2008).

- "A High-pressure Polarized ^{3}He Gas Target for the High Intensity Gamma Source (HIγS) Facility at Duke Free Electron Laser Laboratory", K. Kramer, X. Zong, R. Lu, D. Dutta, H. Gao, X. Qian, Q. Ye, X. Zhu, T. Averett, S. Fuchs, Nuclear Instruments and Methods in Physics Research, Section A, **582**, Issue 2, Pages 318-325 (2007).

Conference/Seminar Talks

- "Application of Polarized ^{3}He in Neutron Electric Dipole Moment (nEDM) Experiment & Nuclear Physics Experiments @ HIGS", National Institute of Standards and Technology, Gaithersburg, MD, August 23, 2010.

- "A New Search for the Neutron Electric Dipole Moment", Princeton University, Princeton, NJ, February 5, 2010.

- "A New Search for the Neutron Electric Dipole Moment", Argonne National Lab, Argonne, IL, January 28, 2010.

- "A New Search for the Neutron Electric Dipole Moment", University of Kentucky, Lexington, KY, January 21, 2010.

- "A New Search for the Neutron Electric Dipole Moment", Indiana University Cyclotron Facility, Bloomington, IN, January 15, 2010.

- "^{3}He Relaxation Time Measurements At 330 mK for the Neutron Electric Dipole Moment (nEDM) Experiment", 40th Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics, University of Virginia, Charlottesville, VA, May 20th, 2009.

- "A New Search for the Neutron Electric Dipole Moment", invited talk at the 3rd workshop of the APS Topical Group in Hadron Physics, GHP2009, Denver, CO, May 1st, 2009.

- "^{3}He Relaxation Time Measurements At 400 mK for the Neutron Electric Dipole Moment (nEDM) Experiment", 2008 75th Annual Meeting of the Southeastern Section of APS, Raleigh, NC, Oct., 2008

- "^{3}He Relaxation Time Measurements At 400 mK for the Neutron Electric Dipole Moment (nEDM) Experiment", APS DNP meeting, Oakland, CA, Oct., 2008.

- "^{3}He Relaxation Study at Low Temperature for the Neutron Electric Dipole Moment (EDM) Experiment", APS April meeting, Dallas, TX, 2006.

nEDM Collaboration talks

- "Measurement of ^{3}He Correlation Function", nEDM Collaboration Meeting, Oak Ridge National Laboratory, Oak Ridge, TN, February, 2010.

- "nEDM Injection Test Update", nEDM Collaboration Meeting, Boston University, Boston, MA, September, 2009.
- "Injection Test Run Plans", nEDM Collaboration Meeting, California Institute of Technology, Pasadena, CA, May, 2009.
- "^{3}He Relaxation Time Measurements At ∼330 mK for the Neutron Electric Dipole Moment (nEDM) Experiment", nEDM Collaboration Meeting, NC State University, Raleigh, NC, February, 2009.
- "The status of ^{3}He Relaxation Time Measurement at 400mK", nEDM Collaboration Meeting, Duke University, Durham, NC, May, 2008.
- "The status of ^{3}He Relaxation Time Measurement at 300∼500mK", nEDM Collaboration Meeting, Arizona State University, Tempe, AZ, February, 2008.
- "The status of ^{3}He Relaxation Time Measurement at 300∼500mK", nEDM Collaboration Meeting, MIT Bates, Boston, November, 2007.
- "The status of ^{3}He Relaxation Time Measurement at 300∼500mK", nEDM Collaboration Meeting, Chicago, June, 2007.
- "Geometric Phase Effect - Correlation Function Measurement at room temperature", nEDM Collaboration Meeting, Caltech, CA, February, 2007.
- "^{3}He Relaxation Time Measurement at 500mK & Geometric Phase Effect in ^{3}He - Correlation Function Measurement at Room Temperature", nEDM Collaboration Meeting, Los Alamos National Laboratory, New Mexico, October, 2006.
- "Polarized ^{3}He Relaxation Studies At Low Temperatures", nEDM Collaboration Meeting, Los Alamos National Laboratory, New Mexico, January, 2006.
- "Polarized ^{3}He Relaxation Studies At Low Temperatures", nEDM Collaboration Meeting, Los Alamos National Laboratory, New Mexico, June, 2005.
- "Polarized ^{3}He Relaxation Studies", nEDM Collaboration Meeting, Los Alamos National Laboratory, New Mexico, August, 2004.

Teaching Experience

- Teaching Assistant of course "Electromagnetic and Weak Introductions in Nuclear Physics", 2008.
- Teaching Assistant of course "General Physics I", 2002 - 2003.

Technical Experience

- Extensive experience with magnetic resonance techniques, including adiabatic fast passage (AFP), free induction decay (FID), magnetic resonance imaging and electron paramagnetic resonance (EPR).
- Extensive experience working with ^{3}He-^{4}He dilution refrigerator and other cryogenic systems.
- Extensive experience working with temperature controllers and cryogenic sensors.

- Extensive experience working with optics and laser systems.
- Extensive experience with spin polarized targets.
- Experience working with pyrex (borosilicate) glass and GE180 (aluminosilicate) glass
- Experience with liquid scintillating neutron detectors.
- Experience with superconducting magnet.
- Computer softwares:
  LabView, ROOT, COMSOL, Mathematica, Autodesk Inventor, C/C++, Fortran, HTML, CGI, Visual Basic, Javascript.
- Computer operating system:
  Windows 95/98/NT/2000/XP/Vista, Unix, Linux, Macintosh, DOS.