

# Liping Gan

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## Education

**Ph.D.**, experimental nuclear & particle physics, 1998, University of Manitoba, Winnipeg, Canada

**M.Sc.**, theoretical nuclear & particle physics, 1988, Peking University, Beijing, China

**B.Sc.**, nuclear physics, 1985, Peking University, Beijing, China

## Professional Appointments

08/2010-present	Professor of Physics, University of North Carolina Wilmington
08/2007-07/2010	Associate Professor of Physics, University of North Carolina Wilmington
08/2001-07/2007	Assistant Professor of Physics, University of North Carolina Wilmington
01/2001-07/2001	Postdoc, University of Kentucky
1998-2000	Postdoc, Hampton University
1992-1997	Research and teaching assistant (Ph.D. graduate student), University of Manitoba
1988-1991	Instructor of Physics, Beijing Medical University (it was incorporated into Peking University in 2000 and was renamed as Peking University Health Science Center), China
1985-1988	Research and teaching assistant (M.Sc. graduate student), Peking University, China

## Selected Research Activities (total 96 publications)

1998-present, Jefferson Lab, Newport News, VA

- Co-spokesperson for the PrimEx experiment in hall B at Jlab to perform a high precision measurement of the  $\pi^0$  lifetime via the Primakoff effect. The first experiment (PrimEx-I) was performed in 2004 and the result was published in 2011 with a total uncertainty of 2.8%, which is more than two and half times better than the Particle Data Group average on the  $\pi^0$  radiative decay width. The second experiment (PrimEx-II) was performed in 2010 to reach the final goal of 1.4% precision. The data analysis is currently in progress. In the past 10 years, I have played a leadership role in the proposal development, experimental setup design and construction, data analysis and publication. Served as a chair for the data analysis review committee. Developed a method to control the overall systematic uncertainty of the PrimEx experimental setup at ~1% level by using Electron Compton scattering. Intensively involved in the design and development of a high-resolution multi-channel hybrid calorimeter (HyCal). Obtained the required number of high resolution, high quality  $\text{PbWO}_4$  crystals from China for HyCal construction through establishing collaboration with Chinese institutes. Played a major role in the design, development and construction of the PrimEx pair spectrometer. Took full responsibility for developing and building a multi-channel scintillating fiber-based photon beam position detector.
- Co-spokesperson for an approved experiment "A Precision Measurement of the  $\eta$  Radiative Decay Width via the Primakoff Effect" (E-10-011) in Hall D at Jlab 12 GeV. This is the first in a series of new proposed measurements in the Primakoff 12 GeV program at Jlab.
- Played a leading role in the development of the 12 GeV Primakoff experimental program at Jlab, "*Precision Measurements of Electromagnetic Properties of Pseudoscalar Mesons at 12 GeV via the Primakoff Effect*". This program includes the radiative decay width measurements on  $\eta$  and  $\eta'$ , as well as transition form factor measurements at low  $Q^2$  on  $\pi^0$ ,  $\eta$  and  $\eta'$ . I initially presented the original proposal at PAC18 in July 2000. With PAC recommendations, this project was addressed in the executive summary of the CEBAF 12 GeV upgrade white paper as one of the major physics programs for Jlab future plans, and it was also included in the executive summary of "Jlab 12 GeV Pre-Conceptual Design Report" in 2003. This project was re-confirmed by two other PACs (PAC23 and PAC25) and remained a top priority physics program with the PAC recommendation "to be developed as one of the leading scientific projects for the next generation of experiments at Jefferson Lab".
- Have been working on developing a new physics program in Hall D to test chiral, P, PC, and C symmetries of QCD by studying the  $\eta$  and  $\eta'$  rare decays. The first proposal will focus on the  $\eta \rightarrow \pi^0 \gamma \gamma$  and  $\eta \rightarrow \pi^0 \pi^0$  channels and will be submitted to PAC in May 2012.
- Undertook substantial responsibility for the hypernuclear spectroscopy experiment (E89-009) in Hall C at Jlab. Responsible for beam energy control. Coordinated an effort, which involved physicists, engineers

and technicians from both Physics and Accelerator Divisions in Jlab to develop various methods to maintain and monitor the beam energy stability. Conducted Monte Carlo simulations on the missing mass, coincidence timing, target temperature and Enge spectrometer optics to optimize experimental setup.

1992-1997, Brookhaven National Laboratory, Upton, NY

- Involved in design, development and testing of new Microstrip Gas Chambers. Developed and implemented software to reconstruct the trajectory of particles in scintillating fiber arrays viewed by Image Intensifier Tubes to study the formation of double- $\Lambda$  hypernuclei.
- Participated in the H-dibaryon research experiments (E813 and E836) and double- $\Lambda$  hypernuclei experiments (E885 and E906) at BNL. Responsible for maintenance and calibration of TOF detector system. Monitored detectors and electronics performance and on-line analysis during the data collection. Analyzed H-dibaryon search experimental data (E813) as Ph.D. thesis project.

1992-1997, TRIUMF Particle Research Laboratory, Vancouver, Canada

- Participated in the experiment to study charge symmetry breaking in n-p elastic scattering at TRIUMF. Calculated the neutron beam energy and polarization profile at the target position.
- Developed a Monte Carlo program to simulate and study the properties of the TRIUMF neutron beam.

1985-1988, Peking University, Beijing, China

- Calculated the EMC effect in the deep inelastic neutrino-nuclei scattering using both on-shell and off-shell models.
- Studied the quark effect in the nuclear weak interaction by using Joint Possessing Quark model and MIT bag model; calculated the width of  $\Lambda$  non-mesonic decay in different hypernuclei; compared the results with the experimental measurements and achieved a better agreement than pre-existing calculations. Published a paper on this topic that won a research award from Peking University.

## **Courses Taught**

2001-present, University of North Carolina Wilmington

- Quantum Mechanics, Thermal Physics, Nuclear and Particle Physics, Classical Mechanics, Modern Physics, General Physics, College Physics

1988-1991, Beijing Medical University (current Peking University Health Science Center)

- Modern Physics, General Physics, Medical Physics

## **Professional Services**

- A panel member for National Science Foundation nuclear physics division in 2010.
- A reviewer for NSF grant proposals since 2006.
- A board member for GlueX collaboration at Jefferson Lab since Jan 2012.
- A member of UNCW Center for the Support of Undergraduate Research and Fellowships advisory board since 2003
- Faculty mentor for the UNCW student organization, Women in Science and Engineering, since March 2009.

## **Honors and Awards**

- Received James F. Merritt research award from UNCW in April 2011.
- PI for four NSF grant awards since 2002.
- For continuous 9 years since 2003, have been honored by UNCW Vice Chancellor for Student Affairs “for being recognized by one or more of the students in graduating class for having made a difference in their lives”, and honored by the Dean of College of Arts & Sciences for “significant contribution to students’ academic experience and personal development”.
- Research award for scientific publications from Peking University in 1988.