

Ping Sun – Curriculum Vitae

Department of Physics and Astronomy
Rutgers University
136 Frelinghuysen Road
Piscataway, NJ 08854-8019

E-Mail: psun@physics.rutgers.edu
Tel: (732) 445-4604 (O)
Fax: (732) 445-4343 (O)
Homepage: <http://www.physics.rutgers.edu/~psun/>

QUALIFICATIONS SUMMARY

- **Ph.D.** in Theoretical Condensed Matter Physics (2001)
- Five Years of **Postdoctoral** Experience in Condensed Matter Theory
- Expertise and Demonstrated Skills in **Analytic** and **Computational** Many-Body Physics
- Seven Years of Undergraduate **Teaching** Experiences in US college as Teaching Assistant, Recitation Instructor, and Lecturer
- Excellent Skills in **Presentation** and **Communication**

EDUCATION

- **Ph.D.**, City College of New York - CUNY, USA, October 2001
 - GPA: **4.00/4.00**
 - Adviser: Professor David Schmeltzer
 - Thesis: One Dimensional Antiferromagnetic Spin Systems
- **M.S.**, Fudan University, Shanghai, China, July 1993
- **B.S.**, Fudan University, Shanghai, China, July 1990

HONOR

- **Junior Travel Award**, 2004, Institute for Complex Adaptive Matter (ICAM)
- **Kornbluth Fellowship**: 1997, City University of New York (CUNY)
- **University Fellowships**: 1994-2000, City University of New York (CUNY)

EMPLOYMENT

- **Postdoctoral Fellow**, Rutgers University, July 2001 to present
 - **Research**
 - * (Quantum) Phase Transitions in the 2D Electron Gas and Heavy Fermions
 - * Many-Body Down-Folding Method for Obtaining Effective Low-Energy Models from Complex Systems
 - * Extensions of the Dynamical Mean Field Theory (DMFT) and their Implementations
 - * Electronic Ferroelectricity using Density Functional Theory
 - **Other**
 - * Supervising Research Projects of Ph.D. Candidate

TEACHING EXPERIENCE

- **Lectured** Scientific Computation Course to classes of more than 30 Engineering and Science Students (2000 & 2001). With the help of an assistant, I taught the students to program in MS Excel, Visual Basic, and Fortran and apply them to data processing and modeling. My duty included preparing syllabus, lecturing, supervising the computer lab class, preparing exams, assigning projects, and grading.
- **Lectured** College Physics Course to a classe of more than 30 Architecture Students (1999). The course covered the standard college physics, from Mechanics, Electricity & Magnetism, to Thermodynamics and Optics. I had the full responsibility of the cause, with an assistant who helped to supervise the labs.
- **Instructed** Recitations of College Physics, including Mechanics, Electricity & Magnetism, Thermodynamics, Waves and Sound, and Optics, to classes of more than 20 Students of Various Majors (1994 - 2001). My recitation usually included reviewing the contents in the previous lectures, solving previous homework problems, assigning new homeworks, grading both homeworks and exams.
- **Supervised** College Physics Lab Sessions of classes of more than 20 Students of Various Majors (1994 - 2001). My responsibilities included setting up equipments, answering questions and offering helps during the measurements, checking the results, and grading the lab reports.

PROFESSIONAL ACTIVITIES

- **Referee**
 - Physical Review B and Physical Review Letters
 - International Journal of Modern Physics B and Modern Physics Letters B
 - Physics Letters A
- **Member**
 - American Physics Society, since 1999

PUBLICATIONS

- D. Schmeltzer and **P. Sun**, “Antiferromagnetic spin ladders – the case of odd numbers of spin- $s=1/2$ chains”, J. Phys.: Cond. Matt. **10**, 4435 (1998).
- **P. Sun** and D. Schmeltzer, “One-dimensional spin-1/2 Heisenberg antiferromagnet in a weak external magnetic field”, Phys. Rev. B **61**, 349 (2000).
- **P. Sun**, D. Schmeltzer, and A.R. Bishop, “Analytic approach to the one-dimensional spin-Peierls system in the entire frequency range”, Phys. Rev. B **62**, 11308 (2000).
- **P. Sun** and G. Kotliar, “Extended dynamical mean field theory and GW method”, Phys. Rev. B **66**, 085120 (2002).
- **P. Sun** and G. Kotliar, “Extended Dynamical Mean Field Theory Study of the Periodic Anderson Model”, Phys. Rev. Lett. **91**, 37209 (2003).
- **P. Sun** and G. Kotliar, “Many-Body Approximation Scheme Beyond GW”, Phys. Rev. Lett. **92**, 196402 (2004).
- **P. Sun** and G. Kotliar, “Consequences of the local spin self-energy approximation on the heavy Fermion quantum phase transition”, Phys. Rev. B **71**, 245104 (2005).
- **P. Sun** and G. Kotliar, “Understanding the Heavy Fermion Phenomenology from Microscopic Model”, Phys. Rev. Lett. **95**, 016402 (2005).
- **P. Sun**, “Mott-Hubbard Scenario for the Metal-Insulator Transition in the Two Dimensional Electron Gas” cond-mat/0608010, submitted to PRL.

CONFERENCE/SEMINAR TALKS

- **“Investigation of spin ladder systems in weak external magnetic field”**
1999 March Meeting of the American Physical Society, Atlanta, GA, March 20-26 (1999).
- **“Quantum v.s. classical magnetism induced by spin-phonon interaction”**
2000 March Meeting of the American Physical Society, Minneapolis, MN, March 20-24 (2000).
- **“One-dimensional antiferromagnetic Heisenberg spin chains”**
Physics Dept, CCNY-CUNY, October (2000).
- **“Antiferromagnetic spin chains and ladders”**
Dept of Physics and Astronomy, Rutgers University, April (2001).
- **“Combining the Extended Dynamical Mean Field Theory and the model GW method”**
2002 March Meeting of the American Physical Society, Indianapolis, IN, March 18-22 (2002).
- **“Combining the GW and the DMFT Method”**
Workshop on Correlation Effects in Electronic Structure Calculations, Trieste, Italy, June 17-21 (2002).
- **“Extended Dynamical Mean Field Theory and GW Approximation”**
Physics Dept, CCNY-CUNY, Nov 6 (2002).
- **“Extended Dynamical Mean Field Theory and the model GW method”**
Conference: Realistic Theories of Correlated Electron Materials, UC Santa Barbara, CA, Nov 18-22 (2002).
- **“Test of extended dynamical mean field theory with GWA on a 3D lattice model with non-local interactions”**
2003 March Meeting of the American Physical Society, Austin, TX, March 3-7 (2003).
- **“Periodic Anderson model in the high temperature regime via extended dynamical mean field theory”**
2003 March Meeting of the American Physical Society, Austin, TX, March 3-7 (2003).
- **“Comparison of the Approximation Schemes for Many-Body Systems”**
First Workshop on Predictive Capabilities for Strongly Correlated Systems, University of Tennessee, Knoxville, Tennessee, Nov 7-9 (2003).
- **“Many-Body Approximation Scheme Beyond GW”**
Brookhaven National Laboratory, Apr 15 (2004).

- **“Bond criticality in the Anderson lattice model”**
Workshop on Novel States and Phase Transitions in Highly Correlated Matter, Trieste, Italy, July 12-23 (2004).
- **“Towards understanding the Heavy Fermion Quantum Phase Transition”**
Physics Dept, CCNY-CUNY, October 6 (2004).
- **“Many-Body Approximation Scheme Beyond GW”**
Workshop “Electronic Structure of Correlated Materials”, Paris, France, December 8-10 (2004).
- **“Understanding the Heavy Fermion Phenomenology from a Microscopic Model”**
Physics Dept, Columbia University, February 16 (2005).
- **“Two-Impurity Dynamical-Mean-Field-Theory Study of the Periodic Anderson Model”**
2005 March Meeting of the American Physical Society, Los Angeles, CA, March 21-25 (2005).
- **“First principles many-body approach to electron gas”**
Physics Dept, CCNY-CUNY, December 7 (2005).
- **“Many-Body Down-folding Approach and its Application to Electron Gas”**
Dept of Physics and Astronomy, NJIT, March 2 (2006).
- **“First principles many-body approach to electron gas”**
2006 March Meeting of the American Physical Society, Baltimore, MD, March 13-17 (2006).
- **“Many-Body Down-folding Approach and its Application to Electron Gas”**
Physics Dept, CCNY-CUNY, April 6 (2006).
- **“Mott-Hubbard Scenario for the Metal-Insulator Transition in the Two Dimensional Electron Gas”**
Physics Dept, Northeastern University, January 11 (2007).

OTHER CONFERENCES/WORKSHOPS

- “NSF Division of Materials Research ITR Computational Workshop”, UIUC, June 17-19 (2004).
- “Quantum Phase Transitions”, KITP, University of California, Santa Barbara, April 11-15 (2005).
- “Strongly Correlated Electrons: Diverse Examples and Unifying Themes”, Institut Scientifique de Cargese, Corsica, France, August 8-20 (2005).