

Biographical Sketch

Shiwei Zhang

Professional preparation

1988 B.S. Physics University of Science and Technology of China
1993 Ph.D. Physics Cornell University

Appointments

2008-present	Professor of Physics	College of William and Mary
2001-2007	Associate Professor of Physics	College of William and Mary
1996-01	Assistant Professor of Physics	College of William and Mary
1995-96	NSF CISE Postdoctoral Fellow and University Postdoctoral Fellow	Ohio State University
1994-95	Postdoctoral Research Associate	Los Alamos National Laboratory

Visiting appointments

07/2009-07/2010: CAS and Renmin U., Beijing, CHINA; 03-05/2003: ISAS/SISSA, Trieste, ITALY; 09/2002-02/2003: Physics and NCSA, UIUC; multiple extended visits to KITP, UCSB and INT, UW.

Selected Awards and Honors

Fellow: American Physical Society (APS), elected in 2009; *Plumeri Award for Faculty Excellence*: W&M, 2009; *S. Spears Associate Professorship*: W&M, 2002; *Alumni Fellowship Award for teaching excellence*: W&M, 2001; *Cottrell Scholar Award*: Research Corporation, USA, 2000. *Faculty Early CAREER Award*: NSF, USA, 1997.

Ten publications related to the proposed project

- Chia-Chen Chang and Shiwei Zhang, “Spin and charge order in doped Hubbard model: long-wavelength collective modes,” *Phys. Rev. Lett.* **104**, 116402 (2010).
- Wirawan Purwanto, Shiwei Zhang, and H. Krakauer, “Excited state calculations using phaseless auxiliary-field quantum Monte Carlo: potential energy curves of low lying C_2 singlet states,” *J. Chem. Phys.* **130**, 094107 (2009).
- Shiwei Zhang and David Ceperley, “The Hartree-Fock ground state of the electron gas,” *Phys. Rev. Lett.* **100**, 236404 (2008).
- Hendra Kwee, Shiwei Zhang, and H. Krakauer, “Finite-size corrections in many-body electronic structure calculations,” *Phys. Rev. Lett.* **100**, 126404 (2008).

- W. Al-Saidi, S. Zhang, and H. Krakauer, “Auxiliary-field quantum Monte Carlo calculations of molecular systems with a Gaussian basis,” *J. Chem. Phys.* **124**, 224101 (2006).
- Simone Chiesa, David Ceperley, and Shiwei Zhang, “Accurate, Efficient and Simple Forces with Quantum Monte Carlo Methods,” *Phys. Rev. Lett.* **94**, 036406 (2005).
- Shiwei Zhang and H. Krakauer, “Quantum Monte Carlo method using phase-free random walks with Slater determinants,” *Phys. Rev. Lett.* **90**, 136401 (2003).
- Shiwei Zhang, “Finite-Temperature Monte Carlo Calculations For Systems With Fermions,” *Phys. Rev. Lett.* **83**, 2777 (1999).
- Shiwei Zhang, J. Carlson, and J. E. Gubernatis, “A Constrained Path Monte Carlo Method for Fermion Ground States,” *Phys. Rev. B* **55**, 7464 (1997).
- Shiwei Zhang, J. Carlson, and J. E. Gubernatis, “Pairing Correlations in the Two-Dimensional Hubbard Model,” *Phys. Rev. Lett.* **78**, 4486 (1997).

Selected synergistic activities

- PI, NSF Petascale team of 10 senior scientists from Arizona State, Cornell, Florida State, MIT, North Carolina State, UIUC, and U Tenn.
- Senior member, DOE Computational Materials Science Network (cmsn) cooperative research team on “Predictive capabilities for strongly correlated materials” (2003-2009).
- Co-organizer: international winter school on “Quantum Monte Carlo methods in physics and chemistry” (Trieste, Italy, 2008). co-organizer: international workshop on “Electronic structure beyond density functional theory” (Leiden, the Netherlands, 2004); co-organizer of several DOE cmsn CRT workshops.

List of collaborators in last 48 months

W. Al-Saidi (W&M), D. Ceperley (UIUC), K. Esler (UIUC), J. Grossman (UCBerkeley), R. Hennig (Cornell), P. Kent (ORNL), J. Kim (UIUC), H. Krakauer (W&M), L. Mitas (NCSU), W. Pickett (UC Davis), W. Purwanto (W&M), R. T. Scalettar (UC Davis), J. Shumway(ASU), A. Srinivasan (FSU), C. J. Umrigar (Cornell), E. J. Walter (W&M)

List of graduate and post-graduate advisers and advisees

Ph. D. thesis adviser: M. H. Kalos (LLNL)

Post-graduate advisers: J. Carlson (LANL), J. E. Gubernatis (LANL), J. W. Wilkins (OSU)

Undergraduate research advisees: C. G. Tahan (Cambridge U), T. J. Walls (SUNY SB),

P. L. Larsen (UT Austin), I. Terrell

Graduate advisees: E. C. Allman (NRL), H. Kwee (W&M), M. Suewattana (ORNL),

W. Purwanto (W&M), J. Xu (W&M)

Post-graduate advisee: W. Al-Saidi (W&M), C.-C. Chang (UC Davis), F.-J. Ma (W&M),

W. Purwanto (W&M)