Yuantao Xie

Contact Information	614 Washington ST SE Blacksburg, VA(24060)	540-315-XXX yuantaomai@xxx.edu Visa: F1

Job Interests Software engineer, software developer, or other jobs related to computer science

Related Courses

Coursera online courses

- Divide and Conquer, Sorting and Searching, and Randomized Algorithms
- Graph Search, Shortest Paths, and Data Structures
- Machine learning

Education

Ph.D. in physics, XXX University, *expected:* Nov 2017
- Ph.D. Advisor: XXX, Ph.D.
- GPA: 3.74/4.0

B.S. in physics, XXX University, Wuhan, Hubei, China, July 2012
- GPA: 3.72/4.0

coding & data analysis

• Java (*proficient*)	Data analysis and modeling
• Mathematica (*proficient*)	Data analysis and modeling
• GNU Octave (*proficient*)	Machine learning
• Origin and Labtalk (*proficient*)	Data analysis and plotting
• LabView (*good*)	Data collection and equipment controlling

Research Experience

Graduate Researcher, Department of Physics, Feb 2013 to present
Supervisor: XXX, Ph.D.
- Low-temperature quantum electronic transport in nanolithographic mesoscopic structures
- Experimental characterization of Aharonov-Bohm quantum phase effects in various mesoscopic interferometer geometries (ring structures, open self-focusing structures, etc.)
- Quantum phase decoherence due to environmental coupling and electron-electron interactions
- Spin interference and quantum edge states from Rashba spin-orbit interaction
- Measurement of spin- and quantum phase coherence times using quantum transport (weak localization and weak antilocalization)
- Electromagnetic transport properties of Ge/III-V heterostructures (partially funded by Intel Corporation)
- Electromagnetic transport characterization of pyrochlore epitaxial films ($Bi_2Ir_2O_7$)

Experimental Skills
- Fabricating nanoscale devices on thin films: photolithography, e-beam lithography, reactive ion etching (ICP-RIE), wet etching, thin film deposition methods, Ohmic contacting and annealing
- Measuring low- and variable-temperature magnetotransport and low-excitation quantum transport by a ^{3}He cryostat and exchange gas closed-cycle cryostat, with superconducting and resistive magnets
- Measuring quantum electronic transport by low noise level electronic signal recovery techniques
- Building equipment, such as high-temperature annealing systems
- Depositing elemental superconductors and metallic thin films by evaporation
- Equipment mastered: photolithographic mask aligner, scanning electron microscopy, reactive ion etchers, atomic force microscopy, profilometer, cryogenic equipment,

vacuum technology, sputter coaters and thin film evaporators, atomic layer deposition, annealers, and electronic equipment (analog and digital lock-in amplifiers, preamplifiers, resistance bridges, temperature controllers, magnet power supplies, etc.)

Journal Publications

1. M. K. Hudait, M. Clavel, P. S. Goley, **Yuantao Xie** and J. J. Heremans, "Magnetotransport properties of epitaxial Ge/AlAs heterostructures integrated on GaAs and silicon." ACS Appl. Mater. Interfaces **7**, 22315 (2015).
2. **Yuantao Xie**, J. J. Heremans and M. B. Santos, "Effect of two-dimensional parity symmetry breaking in Aharonov-Bohm interference phenomena." Integr. Ferroelectr. **174**, 8 (2016).
3. **Yuantao Xie**, C. L. Priol and J. J. Heremans, "Geometrical dependence of quantum decoherence in circular arenas with side-wires." J. Phys.:Condens. Matt. **28**, 495003 (2016).
4. J. J. Heremans, **Yuantao Xie**, Shaola Ren, C. L. Priol and M. B. Santos, "Mapping electromagnetic dualities via quantum decoherence measurements in 2D materials." Proceedings of SPIE **9932**, 993207 (2016).
5. J. J. Heremans, **Yuantao Xie** and C. L. Priol, "Influence of environment and geometry on measured quantum coherence in InGaAs mesoscopic wires and stadia." Accepted for publication in IOP Conference Series (ICPS 2016 proceedings).
6. Wencao Yang, **Yuantao Xie**, Wenka Zhu, K. Park, Aiping Chen, Y. Losovyj, Zhen Li, Haoming Liu, M. Starr, J. A. Acosta, Chenggang Tao, Nan Li, Quanxi Jia, J. J. Heremans and Shixiong Zhang, "Epitaxial thin films of pyrochlore iridate $Bi_{2+x}Ir_{2-y}O_{7-\delta}$: structures, defects and transport properties." Sci. Rep. **7**, 7740 (2017).

Papers in Preparation

1. **Yuantao Xie**, J. J. Heremans and C. L. Priol, "Length dependence of quantum phase coherence in InGaAs wires."
2. **Yuantao Xie**, J. J. Heremans and M. B. Santos, "Aharonov-Bohm effect in self-focusing elliptical potential walls on InGaAs."
3. M. Clavel, Jheng-Sin Liu, **Yuantao Xie**, J. J. Heremans, R. J. Bodnar and M. K. Hudait, "Structural, morphological and magnetotransport properties of epitaxial Boron-doped p-Ge/AlAs and n-Ge/AlAs heterostructures."
4. M. Clavel, Jheng-Sin Liu, **Yuantao Xie**, J. J. Heremans, R. J. Bodnar and M. K. Hudait, "Multi-valley electron conduction at the indirect-direct crossover point in highly-strained Germanium."

Scholarships & Awards

Student Awards, Department of Physics, Virginia Tech

- Ray F. Tipsword Graduate Scholarship, Apr 2016
- Dr. James A. Jacobs Memorial Graduate Fellowship, Apr 2015

Teaching Experience

Teaching Assistant, Department of Physics, Virginia Tech, Sep 2012 to Dec 2013

- helped students to improve their experimental skill
- learned how to explain clearly and logically

CONFERENCE PRESENTATIONS

March Meeting of the American Physical Society

- **Yuantao Xie**, J. J. Heremans, C. L. Priol, S. Vijeyaragunathan, T. D. Mishima, and M. B. Santos, "Quantum coherence of mesoscopic stadia and wires coupled to the environment", Baltimore, MD Mar 14-18, **2016**
- J. J. Heremans, **Yuantao Xie**, M. K. Hudait, M. Clavel, and P. S. Goley,"Electronic properties of epitaxial Ge/AlAs heterostructures on Si and GaAs", Baltimore, MD Mar 14-18, **2016**
- **Yuantao Xie**, J. J. Heremans, S. Vijeyaragunathan, T. D. Mishima, M. B. Santos, " Aharonov-Bohm oscillations due to ballistic closed trajectories in elliptic self-focusing geometries", New Orleans, LA Mar 13-17, **2017**