Curriculum Vitae

Xin Zhang

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Education

- **Ph.D. in Physics, University of Science and Technology of China, June 2021 (expected)**
  - Courses: Calculation Physics, Advanced Quantum Optics
- **M.S. in Physics, University of Science and Technology of China, June 2017**
  - Courses: Quantum Optics, Introduction to Quantum Information, Quantum Information Technology, Cryogenic Physics and Cryogenic Experimental Methods, Superconducting Electronics, Cryogenic Solid State Physics, Very Large Scale Integrated Circuit, Advance Quantum Mechanics
- **B.S. in Optical Engineering, Zhejiang University, June 2016**
  - Courses: Field and Wave Electromagnetics, Applied Optics, Physical Optics, Photoelectronics, Principle of Semiconductor Physics, Solid State Physics, C Programming Language, Microelectronic Devices and Circuits, Principle of Microcomputer, Analog/Digital Circuits

Honors

- Oxford Instruments Rising Star China Scholarship, 2020
- National Scholarship, 2020
- Outstanding Graduate of Zhejiang Province, 2016
- Outstanding Graduate of Zhejiang University, 2016
- Outstanding Student Leader Awards, Zhejiang University, 2013
- First-Class Scholarship for Outstanding Students (top 3%), Zhejiang University, 2013

Projects

- **Supervisor: Dr. Hai-Ou Li and Prof. Guo-Ping Guo, University of Science and Technology of China, China**
  - Electric dipole spin resonance in a silicon MOS quantum dot, January 2020 – Now
  - Implementation of measurement circuit for single-shot readout of the electron spin state, May 2018 – December 2019
  - Design and fabrication of a silicon MOS quantum dot and charge sensing, September 2016 – April 2018
- **Supervisor: Prof. Kewei Liu, Changchun Institute of Optics, Fine Mechanics and Physics, CAS, China**
  - ZnO based ultra-violet (UV) detector, March 2016 – May 2016
- **Supervisor: Prof. Jon Camden, University of Notre Dame, the USA**
  - Surface-enhanced Raman spectroscopy, July 2015 –August 2015
- **Supervisor: Dr. Qiang Li and Prof. Min Qiu, Zhejiang University, China**
  - Synthesis of giant single crystalline Au microplates, December 2014 –May 2016
  - Simulation and experiment on plasmonic welding of silver nanowire junctions, May 2014 – June 2015

Publications

1. *Controlling Synthetic Spin-Orbit Coupling in a Silicon Quantum Dot using Magnetic Field Direction*, **X. Zhang**, Y. Zhou, R. Z. Hu, R. L. Ma, M. Ni, K. Wang, G. Luo, G. Cao, G. L. Wang, P. Huang, X. Hu, H. W. Jiang, H. –O. Li, G. C. Guo and G. P. Guo., arXiv:2012.14636 (2020)
2. *Ultrafast Operations of a Hole Spin Qubit in Ge Quantum Dot*, K. Wang, G. Xu, F. Gao, H. Liu, R. L. Ma, **X. Zhang**, T. Zhang, G. Cao, T. Wang, J. J. Zhang, X. Hu, H. W. Jiang, H. –O. Li, G. C. Guo and G. P. Guo., arXiv:2006.12340

(2020)

3. *Giant Anisotropy of Spin Relaxation and Spin-valley Mixing in a Silicon Quantum Dot*, **X. Zhang**, R. Z. Hu, H.-O. Li, F. M. Jing, Y. Zhou, R. L. Ma, M. Ni, G. Luo, G. Cao, G. L. Wang, X. Hu, H. W. Jiang, G. C. Guo and G. P. Guo., Phys. Rev. Lett. **124**, 257701 (2020) **(Editors' Suggestion & Featured in Physics)**
4. *Controlling spins in silicon quantum dots*, H.-O. Li, **X. Zhang** and G. P. Guo., Journal of Semiconductors **41**, 7, 070402-3 (2020)
5. *Improving mobility of silicon metal-oxide–semiconductor devices for quantum dots by high vacuum activation annealing*, K. Wang, H.-O. Li, G. Luo, **X. Zhang**, F. M. Jing, R. Z. Hu, Y. Zhou, H. Liu, G. Luo. Wang, G. Cao, H. W. Jiang and G. P. Guo et al. EPL. **130**, 27001 (2019)
6. *Semiconductor quantum computation*, **X. Zhang**, H.-O. Li, G. Cao, M. Xiao, G. C. Guo and G. P. Guo., National Science Review **6**, 32 (2019).
7. *Qubits based on semiconductor quantum dots*, **X. Zhang**, H.-O. Li and K. Wang, G. Cao, M. Xiao and G. P. Guo., Chin Phys B **27**: 020305 (2018).

Colloquia and Seminars:

1. "Giant Anisotropy of Spin Relaxation and Spin-Valley Mixing in a Silicon Quantum Dot" (Oral), Physics Five Universities the National Top, Nanjing, China, December 19. 2020.
2. "Giant Anisotropy of Spin Relaxation and Spin-Valley Mixing in a Silicon Quantum Dot" (Oral), Silicon Quantum Electronics Workshop, San Sebastian, Spain, October 14. 2019.
3. "Anisotropy of Single-Spin Relaxation and Spin-Valley Mixing in Silicon Quantum Dots" (Poster), The 22nd National Semiconductor Physics Conference, Hangzhou, China, July 9. 2019.
4. "A Two Channel Silicon Quantum Dot and an Experimental Setup for Spin Qubits" (Poster), China-Japan International Workshop on Quantum Technologies, Hefei, China, August 24. 2018.
5. "Charge Sensing and Controllable Coupling in a Si MOS Double Quantum Dot" (Poster), International Workshop on Recent Experimental Progress in Semiconductor Qubits, Hefei, China, September 13. 2017.

Skills

- **Semiconductor fabrication**
  - Electron beam/ultra-violet lithography, electron beam evaporation, wet etching, annealing
- **Computer programming**
  - MATLAB, Python, Mathematica
- **Electrical measurement**
  - Arbitrary waveform generator (AWG), vector signal generator, oscilloscope, frequency spectrometer, network analyzer, lock-in amplifier, dilution refrigerator
- **Software**
  - Eline-plus (Raith), L-edit, SolidWorks, COMSOL Multiphysics, Origin, Adobe Illustrator, Adobe Photoshop
- **Language**
  - English: TOEFL 102/120
  - Mandarin: native speaker