Alvason Zhenhua Li

Fred Hutchinson Cancer Research Center, Seattle, WA 98109, USA
Email: alvali@fhcrc.org, alvasonli@gmail.com

RESEARCH

- **Postdoctoral Research Fellow,** Vaccine Division, Fred Hutchinson Research Center: Mathematical modeling of epidemic waves. (March, 2014 - present)
- **Postdoctoral Research Fellow,** Basic Sciences Division, Fred Hutchinson Research Center: Biophysical diffusion modeling and image analysis of yeast cells with fluorescent proteins under microfluidic device. (July, 2013 - February 2014)
- **Research Assistant,** Computational Physics Lab, University of Arkansas: Analytical & numerical simulation of quantum resonance and revivals in Morse potentials, double anharmonic potential wells, and the dynamic Wigner-D rotor systems. (2010 - 2013)
- **Research Assistant,** Molecular Beam Epitaxy Lab, University of Arkansas: Monte Carlo stochastic simulation of self-assemble quantum dots and rings; Growth of quantum rings by Molecular Beam Epitaxy and characterized by Atomic Force Microscopy, Scanning Electron Microscopy, and Transmission Electron Microscopy. (2007 - 2010)
- **Research Assistant,** Pulsed Laser Deposition Lab, University of North Dakota: Cryogenic electrical transportation measurement of superconducting and Mott insulating thin films prepared by Pulsed Laser Deposition. (2003 - 2006)

EDUCATION

- **Ph.D.**, Microelectronics-Photonics, University of Arkansas, Fayetteville, AR, *May, 2013.*
- **M.S.**, Physics, University of North Dakota, Grand Forks, ND, *August, 2005.*

SPECIAL SKILLS

Theoretical Modeling and Simulation:

- Numerical modeling of biophysical nutrient diffusion in yeast cells
- Numerical modeling of quantum wells, dots and rings.
- Analytical simulation of double anharmonic quantum potentials.
- Monte Carlo stochastic simulation.

Experimental Growth and Characterization:

- Growth of quantum devices by Molecular Beam Epitaxy.
- Cryogenic electrical transportation measurement of thin films.

Computer Tools:

- Mathematica, Matlab, and C, C++, Java, R, Python for algorithms.
- LaTeX & Microsoft Office for documentation.
- LabVIEW for automation and instrumentation

AWARDS

- **Apple Student Scholarship** for World Wide Developer Conference (2009)
- **Hong Kong Pei Hua Education Foundation Scholarship** for Excellent Engineer (1999)

PUBLICATIONS

First Author:

1. **"Quantum Revivals of Morse Oscillators and Farey-Ford Geometry"** , Alvason Zhenhua Li, William G. Harter, *submitting to Physical Review Letters, (2013). http://arxiv.org/abs/1308.4470*
2. **"Quantum Resonant Beats and Revivals in the Morse Oscillators and Rotors"**, Zhenhua Li, *Dissertation (2013).*
3. **"Holed Nanostructures Formed by Aluminum Droplets on a GaAs Substrate"**, Alvason Zhenhua Li, Zhiming M. Wang, Jiang Wu, and Gregory J. Salamo. *Nano Res., 3: 490-495 (2010).*
4. **"Evolution of Holed Nanostructures on GaAs"** , Alvason Zhenhua Li, Zhiming M. Wang, Jiang Wu, Yanze Xie, Kim A. Sablon, and Gregory J. Salamo. *Crystal Growth & Design, 9 (6), pp 2941-2943 (2009).*
5. **"Electrical Transport Studies of Superconducting Film prepared by Pulsed Laser Deposition"**, Zhenhua Li. *UND Special Collections, Theses (2005).*

Multiple First Authors:

1. **"Critical size of self-propelled motion of droplets on GaAs (100) surface",** Jiang Wu, Zhiming M. Wang, Alvason Z. Li, Mourad Benamara, Jihoon Lee, Sabina D. Koukourinkova, Eun Soo Kim, and Gregory J. Salamo. *J. Appl. Phys. 112, 043523 (2012)*
2. **"Nanoscale Footprints of Self-Running Gallium Droplets on GaAs Surface",** Jiang Wu, Zhiming M. Wang, Alvason Z. Li, Mourad Benamara, Shibin Li, Gregory J. Salamo. *PLoS ONE 6(6): e20765. doi:10.1371/journal.pone.0020765 (2011)*
3. **"On the Secondary Droplets of Self-Running Gallium Droplets on GaAs Surface",** Wu, Jiang; Wang, Zhiming M.; Li, Alvason Z.; Benamara, Mourad; Salamo, Gregory J.. *ACS Applied Materials & Interfaces, 3, 6, 1817-1820 (2011)*

Co-authors:

1. **"Thermal etching process of microscale pits on the GaAs(001) surface",** Shibin Li, Jiang Wu, Zhiming Wang, Zhenhua Li, Yuanjie Su, Zhiming Wu, Yadong Jiang, Gregory J. Salamo. *Phys. Status Solidi RRL 6, 25-27 (2012)*
2. **"Formation of GaAs Double Rings Through Gallium Migration and Nanodrilling",** Wu, Jiang; Wang, Zhiming M.; Li, Alvason Z.; Zeng, Zhaoquan; Li, Shibin; Chen, Gang; Salamo, Gregory. *J. of Nanoelectron. Optoelectron. 6, 58-61 (2011)*
3. **"Intersublevel Infrared Photodetector with Strain-Free GaAs Quantum Dot Pairs Grown by High-Temperature Droplet Epitaxy",** Jiang Wu, Dali Shao, Vitaliy G. Dorogan, Alvason Z. Li, Shibin Li, Eric A. DeCuir, Jr., M. Omar Manasreh, Zhiming M. Wang, Yuriy I. Mazur, and Gregory J. Salamo. *Nano Lett., 10 (4), 1512-1516 (2010)*
4. **"InGaAs Quantum Well Grown on High-Index Surfaces for Superluminescent Diode Applications",** Zhenhua Li, Jiang Wu, Zhiming M. Wang, Dongsheng Fan, Aqiang Guo, Shibing Li, Shui-Qing Yu, Omar Manasreh, and Gregory J. Salamo. *Nanoscale Res. Lett., 5:1079-1084 (2010)*
5. **"Surface mediated control of droplet density and morphology on GaAs and AlAs surfaces",** Jiang Wu, Zhiming M. Wang, Alvason Z. Li, Shibin Li, and Gregory J. Salamo. *Phys. Status Solidi RRL, 4, 12, 371-373, (2010)*
6. **"Intermediate-band material based on GaAs quantum rings for solar cells",** Jiang Wu, Dali Shao, Zhenhua Li, M. O. Manasreh, Vasyl P. Kunets, Zhiming M. Wang, and G. J. Salamo. *Appl. Phys. Lett. 95, 071908 (2009)*
7. **"Multicolor photodetector based on GaAs quantum rings grown by droplet epitaxy",** Jiang Wu, Zhenhua Li, Dali Shao, M. O. Manasreh, Vasyl P. Kunets, Zhiming M. Wang, Gregory J. Salamo, and B. D. Weaver. *Appl. Phys. Lett. 94, 171102 (2009)*
8. **"Structure and transport studies on nanometer YBCO/PBCAO multilayers",** T.-P. Chen, K. Wu, Q. Li, Z. Li, S.Z. Wang, B. Chen, Q.Y. Chen, W.-K. Chu, J.C.-J. Chen, U. Tipparach, Y.C. Soo. *Physica C Vol. 460-462, 403 (2007)*

Contributed Talks

1. "Resonance and Revivals in Quantum Rotors: Comparing Half-integer Spin and Integer Spin", Alvason Zhenhua Li, William G. Harter, *International Symposium on Molecular Spectroscopy, Columbus, Ohio (2013)*
2. "Resonance and revival in Morse Oscillator and double Morse Well Dynamics", Alvason Zhenhua Li, William G. Harter, *International Symposium on Molecular Spectroscopy, Columbus, Ohio (2012)*
3. "Quantum Revivals of the Morse Oscillator in Position Space and Momentum Space", Alvason Zhenhua Li, William G. Harter, *American Physical Society March Meeting, Boston (2012)*
4. "Evolution of Holed Nanostructures on GaAs by Droplet Epitaxy" , Alvason Zhenhua Li, Zhiming M. Wang, Jiang Wu, and Gregory J. Salamo. *Villa Conference on Interactions Among Nanostructures, U.S. Virgin Islands (2009)*
5. "Nanorings of Aluminum Droplet Epitaxy on GaAs Substrate", Alvason Zhenhua Li, Zhiming M. Wang, Jiang Wu, and Gregory J. Salamo. *Materials Research Society Fall Meeting, Boston (2009)*

PROFESSIONAL AFFILIATIONS

- American Physical Society
- American Chemical Society
- Materials Research Society

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