

Publications
William R. Frensley

I Articles in Refereed Publications

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II Articles in Unrefereed Publications

15. W. R. Frensley, "Review of *Applied Quantum Mechanics* by A. F. J. Levi," *Physics Today*, vol. 58, pp. 55-6 (Jan. 2005).
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5. W. R. Frensley, "Gallium Arsenide Transistors," *Scientific American*, vol. 257, no. 2, p. 80 [August 1987].
4. W. R. Frensley, "Quantum Transport Calculation of Resonant-Tunneling Response Time," *Proc. Topical Meeting on Picosecond Electronics and Optoelectronics*, Incline Village, Nev., January 1987.
3. W. R. Frensley, "Quantum Transport Simulation of the Resonant-Tunneling Diode," *1986 IEEE International Electron Devices Meeting, Tech. Digest* p. 571.

2. P. Saunier, B. Kim, and W. R. Frensley, "GaAs Integrated Digital-to- Analog Converter for Control of Power Dual-Gate FETs," *Electronics Lett.*, vol. 19, p. 162 [1983].
1. F. H. Doerbeck, H. M. Macksey, G. E. Brehm and W. R. Frensley, "Ion-Implanted GaAs X-Band Power FETs," *Electron. Lett.*, vol. 15, p. 576 [1979].

III Books and Chapters

5. N. G. Einspruch and W. R. Frensley, editors, *Heterostructure and Quantum Devices*, a volume of *VLSI Electronics: Microstructure Science*, (Academic Press, San Diego, 1994).
4. W. R. Frensley, "Quantum Transport," ch. 9 in *Heterostructure and Quantum Devices*, a volume of *VLSI Electronics: Microstructure Science*, N. G. Einspruch and W. R. Frensley, eds., (Academic Press, San Diego, 1994).
3. W. R. Frensley, "Heterostructure and Quantum Well Physics," ch. 1 in *Heterostructure and Quantum Devices*, a volume of *VLSI Electronics: Microstructure Science*, N. G. Einspruch and W. R. Frensley, eds., (Academic Press, San Diego, 1994).
2. E. H. Rhoderick, W. R. Frensley, and M. P. Shaw, "Properties of Junctions and Barriers," *Handbook on Semiconductors*, Vol. 4, Device Physics, C. Hilsum, ed., North-Holland, Amsterdam, 1993, pp. 1–99.
1. W. R. Wisseman and W. R. Frensley, "GaAs Technology Perspective," ch. 1 in *VLSI Electronics*, vol. 11, *GaAs Microelectronics*, N. G. Einspruch and W. R. Wisseman, eds., Academic Press, 1985.

IV Invited Talks at National or International Scientific Meetings

15. "Systematic Properties of Active Technologies: The Elements of Successful Systems," 61st Device Research Conference, Salt Lake City, UT, June, 2003.
14. "Resonant Tunneling as a Probe of Electron Transport in Semiconductor Heterostructures," First International Conference on Open Problems in Charged Particle Transport, Paris, France, June 1996. (with R. C. Bowen, C. Fernando, G. Klimeck, R. Lake, M. Leng, D. Blanks, and T. S. Moise)
13. "Quantitatively Accurate Simulation of Quantum Semiconductor Devices," International Workshop on Physics and Computer Modeling of Devices Based on Low Dimensional Structures, University of Aizu, Aizu-Wakamatsu, Japan, November 1995. (with R. C. Bowen, C. Fernando, G. Klimeck, R. Lake, and D. Blanks)
12. "Open System Boundary Conditions for the Time-Dependent and Steady-State Schrödinger Equations," Workshop on Density Matrix Methods at the Institute for Theoretical Atomic and Molecular Physics, Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, August 1995. (with J. R. Hellums, C. L. Fernando, R. C. Bowen, and G. Klimeck)

11. "Modeling Tools for the Development of Quantum and Conventional Semiconductor Heterostructure Devices," Government Microcircuit Applications Conference, San Diego, CA, Nov. 1994. (with C. L. Fernando, R. C. Bowen, and G. Klimeck)
10. "Electron Transport in Open Quantum Systems," NATO Adv. Res. Wkshp. on Computations for the Nano-Scale, Aspet, France, Oct. 1992. (with C. Fernando, J. R. Hellums and S. Venkatanarasimhan)
9. "Interactive Modeling of Quantum Heterostructure Devices," Seventh Internat. Conf. on the Numerical Analysis of Semiconductor Devices and Integrated Circuits (NASEC-ODE), Copper Mountain, Colorado, April, 1991.
8. "Quantum Kinetic Theory of Tunneling Devices," Workshop on Computational Electronics, Urbana, Illinois, May, 1990.
7. "Transport Theory of Quantum-Well Tunneling Devices," March Meeting of the American Physical Society, New York, New York, March 1987.
6. "Simulation of Quantum Well Devices," First Austin Workshop on Process and Device Simulation, Austin, Texas, March 1986.
5. "Constraints on Quantum Transistor Structures," Workshop on Compound Semiconductor Microwave Materials and Devices (WOCSEMMAD), San Francisco, Cal., February 1986.
4. "Simulating Quantum Devices Using the Density Matrix," U. S. Army Research Office Workshop on the Fundamentals of Microelectronic Devices, Research Triangle Park, NC. June 1985.
3. "Assesment of Ohmic Contact Technology in GaAs Devices," Workshop on the Physics and Chemistry of Ohmic Contacts, Calif. Inst. Tech., Pasadena, Cal., October 1984.
2. "Physics of High-Speed Semiconductor Devices," Am. Phys. Soc., Dallas, Tx., March 1982.
1. "Prospects for a High-Speed, High Density GaAs Bipolar Digital Technology," U.S.-France Workshop on GaAs Micorstructures and High Performance Devices, Boston, Mass., June 1981.

V Contributed Talks at National or International Scientific Meetings

13. "Quasi-Magnetic Fields Revisited: Second-Order Transport Effects in Graded Semiconductors," Device Research Conference, South Bend, Indiana, June, 2001.
12. "Current Density Operator in Semiconductor Heterostructures," Am. Phys. Soc., Seattle, Washington, March, 1993.
11. "Gain in Nanoelectronic Devices," Physics of Computation Workshop, Dallas, Texas, Oct. 1992.

10. "Models of Transport in Heterostructures," Am. Phys. Soc., Indianapolis, Indiana, March, 1992 (with J. R. Hellums).
9. "Development of an Interactive Design Environment for Heterostructure and Quantum-Well Devices," IEEE Device Research Conf., Boulder, Colorado, June, 1991.
8. "Evaluation of Resonant States by a Fast Numerical Technique," Internat. Symp. on Nanostructures and Mesoscopic Systems, Santa Fe, New Mexico, May, 1991.
7. "Numerical Evaluation of Resonant State Energy and Width," Am. Phys. Soc., Cincinnati, Ohio, March, 1991.
6. "Comparison of Discretization Schemes for Quantum Kinetic Models of Heterostructure Devices," Am. Phys. Soc., Anaheim, California, March, 1990.
5. "Transport in Vertical Field-Effect Device Structures," Workshop on the Physics of Submicron Electron Devices, Ft. Collins, Colo., July 1980.
4. "An Analytic Model of the Breakdown Condition in GaAs Power MESFETs," Workshop on Compound Semiconductors for Microwave Materials and Devices, San Francisco, Cal., February 1980.
3. "Two-Dimensional Numerical Simulation of GaAs MESFETs with Recessed Gate Structure," IEEE Device Research Conf., Boulder, Colo., June 1979.
2. "Interstitial Potential Differences, Ionic Charge, and Electronegativity in Zincblende Semiconductors," Am. Phys. Soc., San Diego, Cal., March 1977.
1. "Contribution of Dielectric Image Force to the Conduction Band Discontinuity in Semiconductor Heterojunctions," Am. Phys. Soc., Denver, Colo., March 1975.

VI Invited Talks at Local Scientific Meetings

4. "Design and Simulation of Quantum Semiconductor Devices," Dallas Section of the IEEE Antennas and Propagation Society, Richardson, Texas, February 1996.
3. "Simulation Techniques for Nanoelectronic Devices," Texas Section of the American Physical Society, Austin Texas, October 1994.
2. "Interactive Modeling for Design of Heterostructure Devices," Symposium of the Dallas Section of the IEEE Microwave Theory and Techniques Society, Richardson, Texas, Nov. 1993.
1. "Electron Transport in Quantum Semiconductor Devices," , Texas Section of American Physical Society, Richardson, Texas, April 1986.

VII Contributed Talks at Local Scientific Meetings

1. "Review of Gallium Arsenide Device Physics," 11'th Ann. Symp. on Electronic Materials Processing and Characterization, Richardson, Texas, June 1992.

VIII Seminars

10. "Systematic Properties of Active Technologies: The Elements of Successful Systems," Condensed-Matter Physics Seminar, University of Southern California, Sept. 10, 2004.
9. "Systematic Properties of Active Technologies: The Elements of Successful Systems," Electrical Engineering Colloquium, University of Notre Dame, May 8 2003.
8. "Theory of Resonant-Tunneling and Quantum Devices," Advanced Device Theory Seminar, University of California at Santa Barbara, December, 1993.
7. "Development of an Interactive Design Environment for Heterostructure and Quantum-Well Devices," Air Force Wright Laboratories, March, 1991.
6. "Nanoelectronics: Semiconductor Device Technology on the Quantum Scale," Dallas Section IEEE Laser and Electro-Optics Soc., October, 1988.
5. "Quantum Transport Theory of Tunneling Devices," Electrical Engineering Colloquium, University of Minnesota, September, 1988 (also at University of Michigan and University of Texas at Arlington, April 1988).
4. "Modeling Quantum Devices Using the Wigner Function," Solid-State Physics Seminar, University of Texas, Austin, Texas, November 1986. (also at University of Texas at Dallas, April 1987, and Texas A&M University, April, 1987.)
3. "Modeling Quantum Devices Using the Wigner Function," Technical Seminar, Naval Research Laboratory, Washington, DC, October, 1986.
2. "Electron Transport in Quantum Semiconductor Devices," Physics Colloquium, University of Houston, Houston, Texas, April 1986.
1. "Simulation of Quantum Semiconductor Devices," Electrical Engineering Seminar, University of Illinois, Urbana, Illinois, February 1986.

IX Patents

7. U. S. Patent 6,359,520, G. A. Frazier and W. R. Frensley, "Optically Powered Resonant Tunneling Device," issued Mar. 19, 2002.
6. U. S. Patent 5,059,545, W. R. Frensley and M. A. Reed, "Three Terminal Tunneling Device and Method," issued Oct. 22, 1991.
5. U. S. Patent 4,959,696, W. R. Frensley and M. A. Reed, "Three Terminal Tunneling Device and Method," issued Sept. 25, 1990.

4. U. S. Patent 4,866,488 W. R. Frensley, "Ballistic Transport Filter and Device," issued Sept. 12, 1989. (TI 10535A)
3. U. S. Patent 4,803,537, A. J. Lewis and W. R. Frensley, "Infrared Detector System Based Upon Group III-V Epitaxial Material," issued Feb. 7, 1989. (TI 9847B)
2. U. S. Patent 4,705,361, G. A. Frazier, W. R. Frensley and M. A. Reed, "Spatial Light Modulator," issued Nov. 10, 1987. (TI 10953)
1. U. S. Patent 4,539,528, B. Bayraktaroglu, B. Kim and W. R. Frensley, "Two-Port Amplifier," issued Sept. 3, 1985.