

## KERWIN CRAYTON FOSTER

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Richmond, Virginia 23227-5902  
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### EDUCATION

- Ph.D. Physics ( Condensed Matter Theory), August 2002,  
Department of Physics, Florida State University,  
Tallahassee, Florida 32306.  
Dissertation: *Predictions of a Superconducting Model of the  $\nu=5/2$  Fractional Quantum Hall State*
- M.S. Physics ( Condensed Matter Theory ), May 1999,  
Department of Physics, The Pennsylvania State University,  
University Park, Pennsylvania 16802.  
Thesis: *Dynamic Relaxation of Surface Tension near the Critical Point*
- M.Div. Biblical Studies ( Missions ), May 1993,  
Gordon-Conwell Theological Seminary,  
South Hamilton, Massachusetts 01982.
- Ph.D. Chemistry ( Physical Chemistry ), December 1990,  
Department of Chemistry, University of North Carolina at Chapel Hill,  
Chapel Hill, North Carolina 27599.  
Dissertation: *Molecular Dynamics Simulation of Water between Platinum Walls*
- M.S. Meteorology ( Cloud Physics ), May 1986,  
Department of Meteorology, University of Wisconsin – Madison,  
Madison, Wisconsin 53706.  
Thesis: *A Theoretical Determination of the Scavenging Coefficient of Submicron Particles by Fog*
- B.S. Engineering ( Mechanical Engineering ), May 1983,  
College of Engineering, Cornell University,  
Ithaca, New York 14853.

### EXPERIENCE

Position: **Assistant Professor of Physics**

Location: Dept. of Physics, Virginia Commonwealth University, Richmond, Virginia

Period: August 2013 – present

Details: I teach three physics and physical science courses per semester.

Position: **Assistant Professor of Physics**

Location: Dept. of Electrical Engineering, Penn State Harrisburg, Middletown, Pennsylvania

Period: January 2006 – June 2013

Details: I teach three physics and physical science courses per semester, and their associated laboratories. Since PSU-Harrisburg lacks a physics major, some of courses I teach are service courses for non-technical majors (e.g., the Earth Science course is among them). Other courses I teach are for physical and biological science majors and engineers.

\* A list of the courses that I've taught at PSU-Harrisburg are listed on page 4

Position: **Assistant Professor of Physics**

Location: Division of Natural Sciences, Dillard University, New Orleans, Louisiana

Period: August 2002 – October 2005

Details: I taught at least three or four physics and physical science courses per semester, and their associated laboratories. Dillard is a liberal arts university, so some of my courses are for non-technical majors (esp. elementary and secondary education majors ) while others are for physical and biological science majors and engineers.

\* A list of the courses that I've taught at Dillard Univ. are listed on page 3

Position: **Research Assistant**; Advisor: Professor Nicholas E. Bonesteel

Project: Theoretical Description of the  $\nu = 5/2$  Fractional Quantum Hall State

Location: Department of Physics, Florida State University, Tallahassee, Florida

Period: June 1999 – August 2002

Details: Calculated the response functions for a superconducting composite-fermion model of the  $\nu = 5/2$  Fractional Quantum Hall State. Made theoretical predictions of the temperature and frequency dependencies of electrical conductivity using the model.

Position: **Research Assistant**; Advisor: Professor Jayanth R. Banavar

Project: Relaxation of Surface Tension near the Critical Point

Location: Physics Department, Pennsylvania State University, University Park, Pennsylvania

Period: January 1997 – February 1999

Details: Ran molecular dynamics simulations of a binary Lennard-Jones fluid system relaxing near its critical point; investigated the theoretical scaling laws governing critical relaxation in the presence of an external field.

Position: United States **Peace Corps Volunteer**

Project: Secondary Education in Tanzania

Location: Mtwara Girls' Secondary School, Mtwara, Tanzania

Period: June 1993 – June 1995

Details: Taught physics, mathematics and chemistry to secondary school students; initiated a goat rearing project and secured a maize hulling machine for the school.

Position: **Research Assistant**; Advisor: Professor Max L. Berkowitz

Project: Computer Simulation of Water between Metallic Walls

Location: Chemistry Department, University of North Carolina, Chapel Hill, North Carolina

Period: August 1986 – August 1990

Details: Developed an intermolecular potential for water-platinum interaction; ran molecular dynamics simulation and analyzed results to discern dynamic properties of water near platinum walls.

Position: **Research Assistant**; Advisor: Professor Pao-Kuan Wang

Project: Computer Simulation of Aerosol Scavenging by Fog

Location: Meteorology Department, University of Wisconsin, Madison, Wisconsin

Period: August 1984 – August 1985

Details: Wrote program simulating dispersion and scavenging of aerosols by fog in a stable planetary boundary layer.

## PUBLICATIONS

- Kerwin C. Foster, N.E. Bonesteel and Steven H. Simon, "Conductivity of Paired Composite Fermions", *Physical Review Letters*, **91**, 046804 (Issue No. 4, July 19-25) (2003).
- K. Raghavan, K. Foster, K. Motakabir and M. Berkowitz, "Structure and Dynamics of Water at the Pt(111) Interface: Molecular Dynamics Study", *Journal of Chemical Physics*, **94**, 2110-2117 (1991).

- M. Rami Reddy, K. Foster and M. Berkowitz, “Structure and Dynamics of Water between Segments of Parallel DNA Molecules”, *Journal of Molecular Liquids*, **41**, 181-192 (1989).
- K. Foster, K. Raghavan and M. Berkowitz, “A Molecular Dynamics Study of the Effect of Temperature on the Structure and Dynamics of Water between Platinum Walls”, *Chemical Physics Letters*, **162**, 32 (1989).

## PRESENTATIONS

- K.C. Foster, N.E. Bonesteel and S. Simon, “Theory of Surface-Acoustic-Wave Propagation in the  $\nu = 5/2$  Fractional Quantum Hall State”, Physical Processes at High Magnetic Fields IV Conference, Santa Fe, NM, October 18-24, 2001.
- K.Foster, K. Raghavan and M. Berkowitz, “A Molecular Dynamics Study of the Water-Platinum Interface”, 1989 Meeting of the Materials Research Society, Boston, Massachusetts, November 26 – December 2, 1989.
- Kerwin C. Foster, Layla Hormozi, Dimitrije Stepanenko and Nicholas Bonesteel, “Calculation of Effective Spin Interaction in Coupled Quantum Dots”, American Physical Society March Meeting, Los Angeles, California, March 21-25, 2005

## FUNDED PROPOSALS

- Enhancement of physics department research and instruction laboratories ( funded by the Board of Regents of Louisiana in 2004 for \$80,000; Principal Investigator: Dr. Abdalla Darwish )
- Enhancement of pre-engineering research and instruction infrastructure at the physics department ( funded by the Board of Regents of Louisiana in 2004 for \$89,000; Principal Investigator: Dr. Abdalla Darwish )

## HONORS

- Leslie N. Wilson Graduate Assistantship, August 2000 – May 2001 and August 2001 – May 2002, Physics Department, Florida State University.
- Graduate Teaching Award, May 1996, Physics Department, Pennsylvania State University
- Department of Education Fellowship, August 1988, Chemistry Department, University of North Carolina
- Graduate Teaching Award, May 1986, Chemistry Department, University of North Carolina

## \* COURSES TAUGHT AT DILLARD UNIVERSITY

**Physics 201:** Elementary non-calculus-based physics for biological science majors. Topics: mechanics

**Physics 201 Laboratory:** experiments in mechanics to complement Physics 201

**Physics 202:** Elem. non-calculus-based physics for biological science majors. Topics: thermo., electricity

**Physics 202 Laboratory:** experiments in thermodynamics, waves and electricity for Physics 202

**Physics 222:** Intro. calculus-based physics for engineers. Topics: thermodynamics, rotational dynamics

**Physics 222 Laboratory:** experiments in thermodynamics and rotational dynamics for Physics 222

**Physics 230:** Introductory calculus-based physics for engineers. Topics: electricity and magnetism

**Physics 230 Laboratory:** experiments in electricity and magnetism to complement Physics 230

**Physics 305:** Advanced Thermodynamics and Statistical Mechanics

**Physics 402:** Introductory Electrodynamics. Topics: vector calculus, electrostatics

**Physics 403:** Advanced electrodynamics and laser optics

**Science 101:** Physical science for non-science majors. Topics: kinematics and planetary motion

**Science 102:** Physical science for non-science majors. Topics: light, sound, heat, electricity and magnetism

**Science 201:** Introductory Earth Science. Topics: earth science overview, geology, seismology

**Science 201 Laboratory:** experiments in geology and soil science to complement Science 201

**Science 202:** Introductory Earth Science. Topics: oceanography, meteorology and astronomy

**Science 202 Laboratory:** experiments in oceanography and meteorology to complement Science 201

**\* COURSES TAUGHT AT PENN STATE UNIVERSITY AT HARRISBURG**

**Earth 002:** Elementary Earth Science for non-science majors. Topics: climatology, carbon cycle, global warming

**Physics 151/251:** Elem. non-calculus-based physics. Topics: thermodynamics, electricity, optics

**Physics 151/251 Lab:** experiments in thermodynamics, waves and electricity and optics for Physics 151

**Physics 211:** Intro. calculus-based physics for engineers. Topics: kinematics, Newtonian mechanics

**Physics 211 Laboratory:** experiments in kinematics and Newtonian mechanics for Physics 211

**Physics 212:** Introductory calculus-based physics for engineers. Topics: electricity and magnetism

**Physics 212 Laboratory:** experiments in electricity and magnetism to complement Physics 212

**Physics 213:** Introductory calculus-based physics for engineers. Topics: fluids, sound and thermodynamics

**Physics 213 Laboratory:** experiments in fluids, sound and thermodynamics to complement Physics 213

**Physics 214:** Introductory calculus-based physics for engineers. Topics: waves, optics, elementary quantum theory

**Physics 214 Laboratory:** experiments in waves, optics and elementary quantum theory to complement Physics 214

**REFERENCES**

- Professor Jayanth R. Banavar, Dean, College of Computer, Mathematical and Natural Sciences, 2300 Symons Hall, University of Maryland, College Park, MD 20742 ( [jayanth@umd.edu](mailto:jayanth@umd.edu) ) (301)405-2316 .
- Professor Nicholas E. Bonesteel, Department of Physics, National High Magnetic Field Laboratory, Florida State University, 1800 East Paul Dirac Drive, Tallahassee, Florida 32310  
[bonestee@magnet.fsu.edu](mailto:bonestee@magnet.fsu.edu) (850) 644-7805, (850) 644-2516.
- Dr. Roger W. Bussard, Asst. Prof. of Physics, Dept. of Electrical Engineering, W256 Olmsted Building, Penn State Harrisburg, Middletown, PA 17057 ( [rogerbussard@comcast.net](mailto:rogerbussard@comcast.net) ) (512)565-3816 .
- Professor Abdalla Darwish, Chairman, Dept. of Physics, Div. of Natural Sciences, Dillard University, 2601 Gentilly Boulevard, New Orleans, Louisiana 70122 ( [adarwish@bellsouth.net](mailto:adarwish@bellsouth.net) ) (504)401-2076, Fax: 816-4840.
- Professor Per Arne Rikvold, Department of Physics, 413 Keen Building, Florida State University, Tallahassee, Florida 32306-4350 ( [prikvold@fsu.edu](mailto:prikvold@fsu.edu) ) (850)644-6814 Fax: 644-8630
- Professor Roberto B. Salgado, Department of Physics, Lawrence University, 711 E. Boldt Way, Appleton, Wisconsin 54911 ( [roberto.b.salgado@lawrence.edu](mailto:roberto.b.salgado@lawrence.edu) ) (920)993-6083