Thomas D. Gutierrez

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Education

- **Ph.D.**, physics, University of California, Davis, June 2000.
- **M.S.**, physics, San Jose State University, August 1994.
- **B.S.**, physics, minors in mathematics and music, San Jose State University, June 1991.

Teaching Experience

- **Postdoctoral Teaching**, Office of the President Faculty Fellow, University of California, Davis, 2000-2002. Using constructivist teaching methods, designed and taught a lower division mechanics course for engineers and science majors (Physics 9A). Taught lower division physics courses for bioscience majors (Physics 7B). Also taught two graduate seminar courses in heavy ion physics (Physics 250). Teaching mentor: Wendell Potter.
- **Graduate School**, Teaching Assistant, University of California, Davis, 1994-2000. Led discussions for lower division engineering and science physics series. Conducted discussion-laboratory sections for lower division honors physics series. Taught labs for lower division physics for bioscience majors. Graded for a graduate course in mathematical methods.

Research Experience

- **Postdoctoral Research**, Postdoctoral Researcher, UC Davis, in residence at Lawrence Berkeley National Laboratory, 2002-present. Hanbury-Brown Twiss interferometry analysis of proton-proton collisions (Collaborators: Daniel Cebra and Daniel Ferenc, Department of Physics, University of California, Davis). Leading strangeness studies using the intrinsic quark model (Collaborator: Ramona Vogt, Nuclear Science Division, Lawrence Berkeley National Laboratory and Department of Physics, University of California, Davis). Visualization of quantum field theory (Collaborator: Scott Johnson, Intel Corporation). Largely a continuation of previous postdoctoral work as a UC Faculty Fellow.

- **Postdoctoral Research**, Office of the President Faculty Fellow, UC Davis, 2000-2002. Pion phase space density analysis of proton-proton collisions (Collaborators: Daniel Cebra and Daniel Ferenc, Department of Physics, University of California, Davis). Leading strangeness studies using the intrinsic quark model (Collaborator: Ramona Vogt, Nuclear Science Division, Lawrence Berkeley National Laboratory and Department of Physics, University of California, Davis). Visualization of quantum field theory (Collaborator: Scott Johnson, Intel Corporation).

- **Doctoral Research**, UC Davis, 1995-2000. Modeled leading charm effects for CERN and Fermilab experiments using the intrinsic charm model. Dissertation: Higher Twist Contributions to Charm and Light Gluino Production (Advisor: Ramona Vogt, Department of Physics, University of California, Davis and Nuclear Science Division, Lawrence Berkeley National Laboratory).

- **Masters Research**, SJSU and NASA Ames Research Center, 1989-1994. Tunable diode laser spectroscopy and computational physics techniques were applied to the analysis of stable carbon isotope ratios diffusing from rapidly heated magnesium oxide crystals. Thesis: The Measurement and Modeling of Carbon Isotope Fractionation During Thermal Degassing of Magnesium Oxide (Advisor: Joseph Becker, Department of Physics, San Jose State University).

Computer Skills

- Languages: FORTRAN, C, Mathematica; some C++

- Operating Systems: Linux/UNIX, Windows; some Mac experience

- Other: considerable computational physics background

Publications

- "Visualizing the Phonon Wave Function," Scott C. Johnson and Thomas D. Gutierrez, American Journal of Physics, **70**, 3 (2002) 227.

- "Asymmetries Between Strange and Antistrange Particle Production in Pion-Proton Interactions, " Thomas D. Gutierrez, R. Vogt, Nucl. Phys. **A705** (2002) 396.

- "Doomsday Fears at RHIC," Thomas D. Gutierrez, The Skeptical Inquirer, Magazine For Science and Reason, **24**, 3 (2000) 29.

- Young and Freedman University Physics (10th Ed.) Instructor's Solution Manual, Volumes 2 and 3, Thomas D. Gutierrez, Addison Wesley Longman, October 2000.

- "Higher Twist Contributions to R-Hadron Phenomenology in the Light Gluino Scenario," T.D. Gutierrez, R. Vogt, J.F. Gunion, University of California, Davis and Lawrence Berkeley National Laboratory, Nucl. Phys. **B591** (2000) 277.

- "Leading Charm in Hadron-Nucleus Interactions in the Intrinsic Charm Model," T. Gutierrez and R. Vogt, Lawrence Berkeley National Laboratory and University of California, Davis, Nucl. Phys. **B539** (1998) 189.

- "An Overview of Isotopic Analysis Using Tunable Diode Laser Spectrometry," T.B. Sauke, J.F. Becker, M. Loewenstein, T.D. Gutierrez, C.G. Bratton, Spectroscopy **9** (1994) 34.

- "Improved Stable Isotope Laser Spectrometer and its Application to Soil Analysis," J.F. Becker, T.B. Sauke, T.D. Gutierrez, C.G. Bratton, in *Novel Laser Sources and Applications*, (J. Becker, J. Gruber, and L. Lam, eds. SPIE Publ., Bellingham, 1994).

Fellowships, Awards, and Honors

- Office of the President Faculty Fellowship, 2000-2002, University of California, Davis.

- Ryan Couch Memorial Fund (Travel Award), 1998 and 2000, Department of Physics, University of California, Davis.

- Nominated for Outstanding Graduate Student Teaching Award, 1995 and 1997, University of California, Davis.

- Computational Physics Award, "A Model of Diffusion in a Potential Using an FTCS Numerical Approximation," 1994, Department of Physics, San Jose State University.

- Outstanding Student Award, 1992 and 1993, Department of Physics, San Jose State University.

- San Jose State University Student Research Competition Finalist, 1993, San Jose State University.

- Frederick N. Fitting Award, 1993, School of Science, San Jose State University. For applying theoretical tools to experimental problems in my thesis research.

- Multicultural Awareness Award, 1992, School of Science, San Jose State University. For promoting cultural awareness of minorities in the physical sciences.

- Graduate Student Researchers Grant, 1991-1994, NASA Ames Research Center.

- Research Experience for Undergraduates (REU) Grant, 1989-1991, National Science Foundation, San Jose State University Foundation.

Presentations and Abstracts

- "Pion HBT from Proton-Proton Collisions at STAR," October 2002, to be presented at the American Physical Society Fall Meeting of the Division of Nuclear Physics, Michigan State University, East Lansing.
- "Pion HBT from proton-proton collisions at STAR," July 2002, poster presented at Quark Matter 2002, Nantes, France.
- "Pion phase space density in pp collisions at the SPS," March 2001, American Physical Society California Section Inaugural Spring Meeting, University of California, Irvine.
- "Pion Phase Space Density in pp Collisions at the SPS," September 2000, invited talk, State University of New York, Stony Brook.
- "Leading Charm in Hadron-Nucleus Interactions," May 2000, invited talk, Lawrence Livermore National Laboratory, Livermore CA.
- "Leading R-Hadrons," April 2000, April Meeting of the American Physical Society, Long Beach, CA.
- "Higher Twist Contributions to R-Hadron Phenomenology or What in the Name of...Does This Title Mean?!" April 2000, Colloquium, San Jose State University.
- "Leading R-Hadrons?" March 2000, Student Colloquium, University of California, Davis.
- "Leading Charm Hadrons in Σ^-A Interactions," April 1998, Joint Meeting of the American Physical Society and the American Association of Physics Teachers, Columbus, Ohio.
- "Charmed Baryon Production in Proton-Hyperon Collisions," November 1996, Student Only Seminar, University of California, Davis.
- "Stable Isotope Ratio Measurements of Carbon Using High Precision Tunable Diode Laser Spectroscopy," 1993, University of California, Riverside, California State University Student Research Competition (statewide).
- "Stable Isotope Ratio Measurements of Carbon Using High Precision Tunable Diode Laser Spectroscopy," 1993, San Jose State University, California State University Student Research Competition (San Jose).
- "High Precision Tunable Diode Laser Spectroscopy as Applied to the Measurement of the Relative Abundance of ^{12}C and ^{13}C," July 1993, San Jose State University Physics Department Seminar.
- "Diode Laser Spectroscopy and Isotope Ratio Measurements," Spring 1993, poster presented at the Annual Convention of the Optical Society of Northern California.

- "Stable Carbon Isotopic Ratio Measurements Using Tunable Diode Laser Spectroscopy," Summer 1992, San Jose State University Physics Department Seminar.
- "Carbon Isotope Fractionation Measurements During Isothermal Degassing of Magnesium Oxide Using Tunable Diode Laser Spectroscopy," March 1992, poster presented at the Optical Society of Northern California Optics Convention.

Academic, Professional, and Community Activities

- Member of the American Physical Society (APS), 1997-present.
- Solutions checker, Instructor's Solutions Manual for Wolfson mechanics chapters, Addison Wesley Longman, 1998.
- Participated in high school and elementary school science outreach programs while a student at San Jose State University, 1992-1993.

References

Ramona Vogt — vogt@lbl.gov
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Berkeley, CA 94720

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