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.

Research Experience

- **Postdoctoral Research**, Office of the President Faculty Fellow, UC Davis, 2000-present. 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).

Teaching Experience

- **Office of the President Faculty Fellow**, University of California, Davis, 2000-present. Currently teaching lower division physics course for bioscience majors and studying pedagogical methods in physics. Also teaching advanced seminar courses in heavy ion physics. Teaching mentor: Wendell Potter. Research mentors: Daniel Cebra and Daniel Ferenc.
- **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 the graduate course in mathematical methods.

Computer Skills

- Languages: FORTRAN, C, Mathematica; some C++ and Perl
- 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**, submitted to the American Journal of Physics, June 2001.
- "Asymmetries Between Strange and Antistrange Particle Production in Hadron-Proton Interactions, " **Thomas D. Gutierrez**, R. Vogt, submitted to Nuclear Physics **B**, June 2001.
- "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, June 2000 - present, 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 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.

Professional Affiliations

- Member of the American Physical Society (APS), 1997-present.

Academic, Professional, and Community Activities

- 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

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