

## Thomas D. Gutierrez

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## Professional Preparation

- San José State University (SJSU), minors in mathematics and music, B.S. physics, 1991
- SJSU, M.S. physics, 1994
- University of California, Davis (UC Davis), Ph.D. physics, 2000
- UC Davis, Faculty Fellow, heavy ion physics (STAR), physics pedagogy, 2000-2002
- UC Davis, postdoctoral researcher, heavy ion physics (STAR), 2002-2004
- Lawrence Berkeley National Laboratory (LBNL), neutrinoless double beta decay (Cuoricino/CUORE), 2004-2006

## Appointments

- 2006-present Assistant Professor, California Polytechnic State University (Cal Poly), San Luis Obispo
- 2004-2006 Postdoctoral Researcher, LBNL
- 2002-2004 Postdoctoral Researcher, UC Davis
- 2000-2002 Faculty Fellow, UC Davis
- 1994-2000 Graduate Student Teaching Assistant, UC Davis
- 1991-1994 Research Assistant, Graduate Student Researchers Program, NASA Ames Research Center (NASA-ARC) and SJSU

## Recent Publications

1. “Distinguishing between Dirac and Majorana Neutrinos with Two-Particle Interferometry,” Thomas D. Gutierrez, LBNL, *Phys. Rev. Lett.* 96, 121802 (2006), nucl-th/0510069,  
<http://link.aps.org/abstract/PRL/v96/e121802>.

2. “Cuoricino and CUORE detectors: Developing big arrays of large mass bolometers for rare events physics,” P. Gorla *et al.* (Cuoricino Collaboration), *Nucl. Phys. Proc. Suppl.* **150**, 214 (2006), doi:10.1016/j.nuclphysbps.2004.11.387
3. “Further developments in the Cuoricino experiment,” S. Pirro *et al.* (Cuoricino Collaboration), *Nucl. Instrum. Meth. A* **559**, 352 (2006), doi:10.1016/j.nima.2005.12.007.
4. “The Cuoricino and CUORE double beta decay experiments,” R. Ardito *et al.* (Cuoricino and CUORE Collaborations), *Prog. Part. Nucl. Phys.* **57**, 203 (2006), doi:10.1016/j.ppnp.2005.11.030.
5. “Cuoricino Status and CUORE Prospects,” C. Brofferio *et al.* (Cuoricino and CUORE Collaborations), *Nucl. Phys. Proc. Suppl.* **145**, 268-271 (2005), doi:10.1016/j.nuclphysbps.2005.04.020.

## Manuscripts in Preparation

1. “Relativistic Curve Balls: What Can We Learn About Field Theory by Investigating the Relativistic Bernoulli Equation?” T.D. Gutierrez, J. Goldman, A.E. Griffith, and J. Lamoureux, Cal Poly, manuscript in preparation for the *American Journal of Physics*, 2007.
2. “Composite macro-bolometers for the rejection of surface radioactive background in the CUORE experiment,” I. Bandac *et al.*, submitted to the *Journal of Applied Physics*, May 2006.

## Other Publications

1. “Intensity Interferometry with Anyons,” T.D. Gutierrez, UC Davis, *Phys. Rev.* **A69**, 063614 (2004), quant-ph/0308046, <http://link.aps.org/abstract/PRA/v69/e063614>.
2. “Visualizing the Phonon Wave Function,” Scott C. Johnson and Thomas D. Gutierrez, UC Davis, *Am. J. Phys.* **70**, 3 227 (2002), doi:10.1119/1.1446858.
3. “Asymmetries Between Strange and Antistrange Particle Production in Pion-Proton Interactions,” T.D. Gutierrez and R. Vogt, LBNL and UC Davis, *Nucl. Phys.* **A705**, 396 (2002), hep-ph/0107044, doi:10.1016/S0375-9474(02)00658-9.
4. “Higher Twist Contributions to R-Hadron Phenomenology in the Light Gluino Scenario,” T.D. Gutierrez, R. Vogt, and J.F. Gunion, LBNL and UC Davis, *Nucl. Phys.* **B591**, 277 (2000), hep-ph/0002046, doi:10.1016/S0550-3213(00)00556-3.

5. "Leading Charm in Hadron-Nucleus Interactions in the Intrinsic Charm Model," T. Gutierrez and R. Vogt, LBNL and UC Davis , *Nucl. Phys.* **B539**, 189 (1999), hep-ph/9808213,  
*doi:10.1016/S0550-3213(98)00748-2*.
6. "Doomsday Fears at RHIC," Thomas D. Gutierrez, *The Skeptical Inquirer, Magazine For Science and Reason* **24**, 3 29 (2000).
7. Young and Freedman *University Physics* (10th Ed.) Instructor's Solution Manual, Volumes 2 and 3, Thomas D. Gutierrez, Addison Wesley Longman, October 2000.
8. "An Overview of Isotopic Analysis Using Tunable Diode Laser Spectrometry," T.B. Sauke,J.F. Becker, M. Loewenstein, T.D. Gutierrez, C.G. Bratton, SJSU and NASA-ARC, *Spectroscopy* **9**, 34 (1994).

## Synergistic Activities

In 2000, Gutierrez was awarded a Faculty Fellowship at UC Davis, permitting him to explore pedagogical methods in physics as a postdoc. In this context he was given the opportunity develop an active learning classroom for an undergraduate mechanics course for scientists and engineers. He has a strong interest in public outreach and education and has published to help inform the public about heavy ion physics ("Doomsday Fears at RHIC," *The Skeptical Inquirer* **24**, 3 29, 2000). He has also worked with the publisher Addison Wesley Longman, constructing the instructor's solution manual for the 10/e of University Physics by Young and Freedman (Instructor's Solution Manual, Volumes 2 and 3, 2001). As a Master's student in 1993 he was given the Frederick N. Fitting award at SJSU for the novel application of theory to experiment in his thesis work while investigating the diffusion of CO<sub>2</sub> in MgO crystals. In 1992, he was the recipient of the Multicultural Awareness Award from the School of Science, SJSU for his commitment to promoting cultural diversity in the academic setting and was himself a participant in the REU program at SJSU as an undergraduate.

## Grants, Awards, and Honors

- **2007** State Faculty Support Grant proposal "Development of a Neutrinoless Double Beta Decay Analysis at Cal Poly," awarded March 2007.
- **2007** Support for Faculty Efforts to Obtain Extramural Funding proposal "Analysis of Data from the Cuoricino Detector," submitted in February 2007.
- **2006** C<sup>3</sup>RP proposal "On the road to CUORE: Developing an Infrastructure for the Analysis of Cuoricino Data," submitted in November 2006 (rejected February 2007).

- **2006** NSF proposal “RUI: A Search for Neutrinoless Double Beta Decay in Tellurium Using the Cuoricino Detector,” submitted in September 2006.
- **2000** Office of the President Faculty Fellowship, UC Davis .
- **1991** NSF Graduate Student Researchers Grant, NASA-ARC and SJSU.
- **1989** NSF Research Experience for Undergraduates (REU) Program, SJSU.

## Collaborations and Other Affiliations

- Current and past collaborators: CUORE and Cuoricino Collaborations; J. Goldman, A.E. Griffith, and J. Lamoureux (Cal Poly); STAR Collaboration; Ramona Vogt, LBNL and UC Davis; Scott C. Johnson, Intel Corporation, Portland, OR
- Graduate Advisor: Ramona Vogt, LBNL and UC Davis; Postdoctoral advisors: Nu Xu and Kevin Lesko, LBNL
- Thesis and Postgraduate Sponsors: none
- Member of the American Physical Society (APS) and the American Association of Physics Teachers (AAPT)