# David Goldhaber-Gordon

Geballe Lab for Advanced Materials
McCullough Building
476 Lomita Mall
Stanford, CA 94305
(650) 724-3709 Fax (650) 724-3681

*goldhaber-gordon@stanford.edu*
www.goldhaber-gordon.com

**Position**

**Stanford University** Palo Alto, CA

Sept 2001– Assistant Professor of Physics, Experimental Condensed Matter.

**Harvard University** Cambridge, MA

July 1999– Aug 2001 Junior Fellow in the Harvard Society of Fellows. Researching electronic quantum states and many-body interactions in semiconductor nanostructures.

**Education**

**Massachusetts Institute of Technology** Cambridge, MA

June 1994– June 1999 Supported by Hertz Foundation PhD Fellowship. Working with Prof. Marc Kastner in collaboration with Prof. Udi Meirav (Weizmann Institute) and Dr. Olivier Klein. Thesis title: *The Kondo Effect in a Single-Electron Transistor*. Spent September 1995–July 1996 at the Weizmann Institute to fabricate and characterize samples.

**Harvard University** Cambridge, MA

1990–1994
- AB Magna Cum Laude with high honors in Physics
- AM in History of Science. My coursework focused on history of Mathematics, Astronomy, and Physics.
- Master's Paper: *Laplace and Boscovich: Controversy over the comets*

**Awards**

- Inaugural recipient of the George E. Valley Prize of the American Physical Society, 2002. This prize will be awarded every two years to an individual under the age of thirty "to recognize his or her outstanding scientific contribution to the knowledge of physics".
- 2002 McMillan Award, highest accolade for an early-career condensed matter physics experimentalist or theorist.
- Office of Naval Research Young Investigator, 2001-2004.
- Alfred P. Sloan Foundation Fellowship 2003-
- Best paper by a young author, Int'l Conf. on Physics of Semiconductors, 1998.
- Review of nanoelectronic computing chosen MITRE Corp. best paper of 1997.
- Martin Deutsch Award for the most promising experimental physics graduate work at MIT for 1997.
- Hertz Foundation PhD Fellow 1994–1999.
- MIT Karl Taylor Compton PhD Fellow 1994–1996. Two fellowships were awarded to prospective graduate students in physics from over 400 applicants.
- Office of Naval Research Fellowship, 1994: declined.

**Publications**

• Y. Oreg and D. Goldhaber-Gordon, "Two-channel Kondo effect in a modified single-electron transistor", *Phys. Rev. Lett.* **90**/136602 (2003).

• Gergely Zarand, Arne Brataas, and David Goldhaber-Gordon, "Kondo effect and spin filtering in triangular artificial atoms", *Solid State Comm.* **126**, 463–466 (2003).

• A. Kogan, G. Granger, M.A. Kastner, D. Goldhaber-Gordon, Hadas Shtrikman, D. Mahalu, and U. Meirav, "Singlet-triplet transition in a single-electron transistor at zero magnetic field" *Phys. Rev. B***67**/113309 (2003).

• J.B. Miller, D.M. Zumbuhl, C.M. Marcus, Y.B. Lyanda-Geller, D. Goldhaber-Gordon, K. Campman, and A.C. Gossard, "Gate-Controlled Spin-Orbit Quantum Interference Effects in Lateral Transport", *Phys. Rev. Lett.* **90**/076807.

• S.M. Cronenwett, H.J. Lynch, D. Goldhaber-Gordon, L.P. Kouwenhoven, C.M. Marcus, K. Hirose, and N.S. Wingreen, and V. Umansky, "The Low-Temperature Fate of the 0.7 Structure in a Point Contact: A Kondo-like Correlated State in an Open System", *Phys. Rev. Lett.* **88**, 226805 (2002).

• Adam E. Cohen and D. Goldhaber-Gordon, "Phonons in Nanoparticles" (submitted) 2002.

• D. Goldhaber-Gordon and I. Goldhaber-Gordon, "Molecular electronics: Momentous period for nanotubes", *Nature* **412**, pp. 594–597, 2001.

•I. G. Zacharia, D. Goldhaber-Gordon, G. Granger, M. A. Kastner, Yu. B. Khavin, Hadas Shtrikman, D. Mahalu, and U. Meirav, "Temperature dependence of Fano line shapes in a weakly coupled single-electron transistor", *Phys. Rev. B* **6415**, pp. 155311/1–5, 2001.

•D.S. Duncan, D. Goldhaber-Gordon, R.M. Westervelt, K.D. Maranowski, and A.C. Gossard, "Coulomb-blockade spectroscopy on a small quantum dot in a parallel magnetic field", *Appl. Phys. Lett.* **77**, pp. 2183-2185, 2000.

•J. Göres, D. Goldhaber-Gordon, S. Heemeyer, M.A. Kastner, Hadas Shtrikman, D. Mahalu, and U. Meirav, "Fano resonances in electronic transport through a single-electron transistor", *Phys. Rev. B*, **62**, pp. 2188-2194, 2000.

•Jeroen M. Elzerman, Silvano De Franceschi, David Goldhaber-Gordon, Wilfred G. van der Wiel, and Leo P. Kouwenhoven, "Suppression of the Kondo effect in a quantum dot by microwave radiation", *J. Low Temp. Phys.* **118**, pp. 375-389, 2000.

• D. Goldhaber-Gordon, J. Göres, M.A. Kastner, Hadas Shtrikman, D. Mahalu, and U. Meirav, "From the Kondo regime to the mixed-valence regime in a single-electron transistor", *Phys. Rev. Lett.* **81**, pp. 5225–5228, 1998.

• D. Goldhaber-Gordon, Hadas Shtrikman, D. Mahalu, David Abusch-Magder, U. Meirav, and M.A. Kastner, "Kondo effect in a single-electron transistor", *Nature* **391**, pp. 156–159, 1998.

• David Goldhaber-Gordon, Michael S. Montemerlo, J. Christopher Love, Gregory J. Opiteck, and James C. Ellenbogen, "Overview of Nanoelectronic Devices", *Proceedings of the IEEE* **85**, p. 521–540, 1997. Special issue devoted to nanoelectronics. Chosen as best paper of 1997 by MITRE Corporation.

• O. Klein, D. Goldhaber-Gordon, C. de C. Chamon, and M. A. Kastner, "Magnetic-field dependence of the level spacing of a small electron droplet", *Phys. Rev. B, Rapid Comm.* **53**, p. R4221–4224, 1996.
• O. Klein, C. de C. Chamon, D. Goldhaber-Gordon, M.A. Kastner, and X.-G. Wen, "Phase Transitions in Artificial Atoms", *Quantum Transport in Semiconductor Submicron Structures NATO ASI Series E*, B. Kramer ed., p. 239–249, 1996.

**Selected invited talks on Kondo effect and spin in a single-electron transistor**

March 1998 **APS Annual Meeting** Los Angeles, CA
In addition to giving an invited talk, I was one of four instructors for a tutorial on semiconductor quantum dots, with hundreds of attendees.

August 1998 **Int'l Conference on the Physics of Semiconductors** Jerusalem, Israel

August 1998 **ICTP Mesoscopics Workshop** Trieste, Italy

Sept. 1998 **PHASDOM98: Meeting of the European Consortium on Mesoscopic Systems** Neuchatel, Switzerland

Dec. 1998 **ITP Mesoscopics Workshop** Santa Barbara, CA

Jan. 1999 **Rencontres de Moriond** Les Arcs, France

March 1999 **NRIM Symposium on Quantum Phenomena in Advanced Materials at High Magnetic Fields** Tsukuba, Japan

August 1999 **Electronic Properties of 2-Dimensional Systems (EP2DS-13)** Ottawa, Canada

August 1999 **Strongly Correlated Electron Systems (SCES-99)** Nagano, Japan

May 2000 **TPI Workshop on Interactions and Chaos in Mesoscopic Systems** Minneapolis, MN

May 2000 **NATO Workshop on Size-dependent Kondo Effect** Pecs, Hungary

July 2000 **ICTP Correlated Electron Systems Workshop** Trieste, Italy

Oct. 2000 **NEC Symp. on Spins in Mesoscopic Electron Systems** Nasu, Japan

Nov. 2000 **Iowa State Physics Department Colloquium** Ames, IA

Jan. 2001 **University of Georgia Physics Department Colloquium** Athens, GA

Oct. 2001 **"An Open World of Physics" Symposium** Stony Brook, NY

Nov. 2001 **IBM Physical Sciences Colloquium** Almaden, CA

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| Dec. 2001 | **ITP Mesoscopics Workshop** | Santa Barbara, CA |
| Feb. 2002 | **Stanford Material Science Colloquium** | Stanford, CA |
| Mar. 2002 | **APS George E. Valley Prize talk** | Indianapolis, IN |
| Apr. 2002 | **SFSU Physics Colloquium** | San Francisco, CA |
| Apr. 2002 | **UC Davis Physics Colloquium** | Davis, CA |
| Dec. 2002 | **UIUC Physics Colloquium** | Urbana, IL |
| May 2003 | **SLAC Physics Colloquium** | Stanford, CA |
| Aug. 2003 | **Summer Institute on Nanotechnology** | Stanford, CA |

During the last three years I have also given seminars at many universities and companies, including: IBM T.J. Watson Research Center, Lucent Technologies Bell Labs, MIT, Harvard, Stanford, Cornell, U. of Illinois Urbana, Berkeley, University of Chicago, Michigan, U. Penn, SUNY Stony Brook, U. of Illinois Chicago, Rutgers, and Yale.

**University and Community Service**

I regularly serve as a reviewer for *Nature, Science, Phys. Rev. Letters,* and *Phys. Rev. B.*

Within the Physics department, I serve on the Undergraduate Study Committee, Graduate Study Committee, and Colloquium Committee (co-chair). I also served on the AMO search committee (2001-2) and Long-range Planning Committee (2002-3). Within the Geballe Laboratory for Advanced Materials, I am on the Committee to select the next director, and am extremely active on the Long-range Planning Committee (*ex officio*).

This winter I will be organizing either one or two Workshops (at IBM Almaden and/or Aspen), on Spintronics and Mesoscopic Physics, respectively.