

Weiqing Gu

DEPARTMENT OF MATHEMATICS
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PROFESSIONAL PREPARATION

1982 - 1984 **Bachelor's Degree** in Mathematics, Shanghai Teachers University
1984 - 1988 Teaching Mathematics at Shanghai Teachers University
1989 - 1995 **Ph.D.** in Mathematics, University of Pennsylvania (**M.S.** 1993)
1995 - 1996 **Master's Degree** in Computer Science, University of Pennsylvania

APPOINTMENTS

2002 - present Associate Professor of Mathematics at Harvey Mudd College
(Research fellow at UCI, Fall 99)
1996 - 2002 Assistant Professor of Mathematics at Harvey Mudd College
(Research fellow at the Computer Science Research Institute of Sandia Nat. Lab., present)

PUBLICATIONS: PROJECT RELATED

- Philip D. Cha and Weiqing Gu (1999), *Model Updating Using an Incomplete set of Experimental Modes*. **The Journal of Sound and Vibration**, Vol. **233(4)**, 2 Dec, **99**, 587-600.
- Philip D. Cha and Weiqing Gu (1999), *Comparing the Perturbed Eigensolutions of a Generalized and a Standard Eigenvalue Problem*. **The Journal of Sound and Vibration**, Vol. **227(5)**, 11 Nov, **99**, 1122-1132.
- Rida T. Farouki, Weiqing Gu, and Hwan Pyo Moon (2000), *Geometry of Minkowski Roots*. **Geometric Modeling and Processing 2000**, **IEEE Computer Society Press**, 287-300(2000).
- Weiqing Gu and Ian Weiner, *Minkowski Geometric Algebra of Quaternion Sets*. **International Journal of Pure and Applied Mathematics**. Vol. **3**, No. **4**, **2002**, 385-411. *This is a publication with an undergraduate at HMC.*
- Philip D. Cha and Weiqing Gu, *Perturbation Method for a Symmetrized Standard Eigenvalue Problem*. **International Journal of Computational and Numerical Analysis and Applications**. Vol. **2**, No. **3**, **2002**, 337-350.

PUBLICATIONS: GENERAL

- Weiqing Gu (1997), *The Stable 4-dimensional Geometry of the Real Grassmann Manifolds*. **Duke Mathematical Journal**, Vol. **93**, No. **1**, 155-178.
- Weiqing Gu and Shenjun Jiang (1998), *Knotty Matrices in Knots*. **The Journal of Knot Theory and its Ramifications**, Vol. **8**, No. **6**, 701-707.
- Daniel Grossman and Weiqing Gu (2001), *Uniqueness of Volume-Minimizing Submanifolds Calibrated by the First Pontryagin Form*, **the Transactions of the American Mathematics Society**, Vol. **353**, No. **11**, Pages 4319-4332. (Article also electronically published on June 14, 2001.)
- Herman Gluck and Weiqing Gu (2001), *Volume-Preserving Great Circle Flows on the 3-Sphere*, **Geometriae Dedicata**, Vol. **88**, **2001**, Pages 259-282.
- Weiqing Gu and Christopher Pries, *Examples of Cayley Manifolds in R^8* . **Houston Journal of Mathematics**. Electronic Edition Vol. **30**, No. **1**, **2004**, pages 55-87. *This is a publication with an undergraduate at HMC.*

SYNERGISTIC ACTIVITIES

- *Actively involving students in research:*
 - SUMMER RESEARCH STUDENTS SUPERVISED: Dylan Helliwell, Naveen Mathew, Drew Bernat, Bill Williams, Michael Schubmehl, Timothy Prescott, Brian Kappus, Ryan Haskett, Ian Weiner, Christopher Pries, Micah Smukler, Ross Richardson, William Chang, Lindsay Crowl, Eric Malm, Katherine Todd-Brown, Lorraine Thomas, Michael Vrable, Matt Holden and many more. Some of these students have conducted research with me for two summers.
 - INDEPENDENT STUDY STUDENTS SUPERVISED: In order to prepare the HMC students to conduct research with me, I usually guide them (every year 2-4 students) to take an independent study with me on special course materials or research papers related to a particular research project.
 - SENIOR THESES STUDENTS SUPERVISED: I have been supervising about 14 senior thesis students since 1996. Four of them won the Chavin Prize for the best mathematics thesis. **Almost all my thesis students are now doing graduate work at universities such as UC Berkeley, U. Chicargo, U. Washington, Duke, Caltech and Stanford.**
- *Industrial collaborations:*
 - Consultant for the Bank of America clinic 97-98 and for Environmental Systems Research Institute clinic 98-99.
 - Faculty clinic adviser for ViaSat, Inc. clinic, 01-02. **My team has won that year's Best Math Clinic Awards.**
 - Faculty clinic adviser for Sandia National Laboratories clinic, present academic year.
 - Faculty adviser for Summer 02 IPAM (Inst. for Pure and Applied Mathematics) Research in Industrial Projects for Students. (The project I supervised comes from Los Alamos Nat. Lab.)
 - Currently, a research fellow at the Computer Science Research Institute of Sandia National Laboratories in collaboration with Dr. Louis Romero and Dr. Jeff Mason on the research project of COSPAS-SARSAT (Search And Rescue Satellite-Aided Tracking).
- *Active in information dissemination through electronic course development, conference organizations and speaker engagements:*
 - Developed a multi-media course on the Geometry of Curves and Surfaces with Applications to Computer Aided Geometric Design. (As the principal investigator on this three summer Mellon funded project), supervised 7 summer working students and collaborated with Professor Michael Moody and professor Ran Libeskind-Hadas in the summer of 97.
 - Organized Mt. Baldy Conference on Differential Geometry, Fall 2001. Arranged several colloquium speakers for math and computer science students. Guided math forums at HMC.
 - National and International invited and keynote speaker, U.S., Italy, Canada, China, including support from NSF, AMS, AWM, IPAM, AIM, ONR, MSRI and various universities at U.S.
- *Professional Reviewer and conference session chairman:* Reviewer for NSF proposals, and research journals such as Proceeding of the American Mathematical Society and Inventiones Mathematicae. Chairman for some of differential geometry and computer aided geometric design sessions of several conferences such as ICM (International Congress of Mathematicians)1998(at Berlin) and 2002 (at Beijing).

GRANTS

- NSF-0414001,2004-2007.
- Travel grants from NSF, NSA, MSRI, AWM, ONR, and various institutions, 1996-2004.
- Faculty Research Grant (1996–2004) and Mellon Grants from Harvey Mudd College, 1997.