

Curriculum Vitae

Rachael Hageman

Department of Mathematics
Case Western Reserve University
10900 Euclid Avenue, Yost 206
Cleveland, OH 44106
rachael.hageman@case.edu

Education

- Case Western Reserve University, Ph.D. Mathematics May 2007.
Dissertation: Large scale Bayesian Parameter Estimation and Sensitivity Analyses for Cardiac Metabolism during Ischemia.
- Case Western Reserve University, M.S. Mathematics January 2006.
Thesis: Iterative Methods for Structured Blind Deconvolution.
- State University of College at Fredonia, B.S. May 2002.
cum laude

Professional Experience

- **Cardiac Mechanics and Remodeling Workshop.**
Mathematical Biosciences Institute, 2006.
Participated in a workshop on mechanical function of the heart for diagnosis and treatment of mechanical dysfunction during disease.
- **European Mathematical Society Program: Mathematical Models of the Heart.**
Svalbard, Norway, 2006.
Participated in an intensive five day program for mathematical modeling of the heart. Lectures provided basic training for mathematical models for biological systems with applications to the heart.
- **Statistical and Numerical Methods for Inverse Problems Workshop.**
University of Bologna, 2005.
Attended a seminar pertaining to integrated numerical and statistical methods for inverse problem with applications in image processing.
- **Image Processing Workshop.**
Mathematical Sciences Research Institute (MSRI), 2004.
Supported to attend a workshop on image processing.
- **Research Experience for Undergraduates.**
Worcester Polytechnic Institute, 2001.
Selected to participate in a NSF funded Research Experience for Undergraduates in Industrial Mathematics. Worked with DEKA Research & Development Corporation on the control system for the *ibot*, a motorized wheel-chair that climbs stairs.

Teaching Experience

- **Department of Electrical Engineering and Computer Science, Instructor.**
Case Western Reserve University, 2007.
Instructing a graduate course in Applied Engineering Statistics with a focus on computer programming with applications to business and industry.

- **Summer Medical and Dental Education Program, Instructor.**
Case Western Reserve University, 2006-present.
Instructing an integrated Calculus program for pre-medical and dental students.
- **Department of Mathematics, Instructor.**
Case Western Reserve University, 2002-2007.
Instructed Calculus for six semesters to undergraduates. Responsibilities included lesson planning, lecturing, exam preparation and homework and grading.
- **Learning Center, Tutor.**
State University of New York at Fredonia, 2000-2002.
Tutored students in mathematics on a drop-in basis and trained to teach students with learning disabilities.

Awards

- **SIAM travel grant.**
Travel award to present at the International Congress on Industrial and Applied Mathematics (ICIAM 07).
- **Association for Women in Mathematics travel grant.**
Joint Mathematics Meeting: New Orleans, LA. January 2007
Selected and funded to present my research and attend a workshop.
- **Research Fellowship, Department of Mathematics.**
Case Western Reserve University, 2002-present.
- **Research Fellowship, Center for Modeling Integrated Metabolic Systems.**
Case Western Reserve University, 2002-2004.
- **Graduate Dean's Award in Instructional Excellence, Department of Mathematics.**
Case Western Reserve University, 2003.
Nominated by students and faculty for excellence in teaching.

Memberships

- American Mathematical Society (AMS)
- Association for Women in Mathematics (AWM)
- Mathematical Association of America (MAA)
- Society of Industrial and Applied Mathematics (SIAM)
- Pi Mu Epsilon (honors society)

Publications

- D. Calvetti, R. Hageman and E. Somersalo: *Large-scale Bayesian parameter estimation for a three compartment cardiac metabolism model during ischemia.* Inverse Problems (22), 2006: 1797-1816.
- D. Calvetti, R. Hageman, R. Occhipinti and E. Somersalo: *Sensitivity analysis and stability of a three-compartment model for cardiac metabolism.* (2006) submitted.
- R. Hageman, L. Zhou, M. Cabrera, E. Somersalo and D. Calvetti: *Dynamic Bayesian sensitivity analysis of redox states in cardiac metabolism during ischemia.* (2006) submitted.

- D. Calvetti, R. Hageman, R. Occhipinti and E. Somersalo: *Large-scale statistical parameter estimation during circulatory occlusion* International Conference on Computational and Mathematical Methods in Science and Engineering (CMMSE) proceedings, 2005.
- D. Calvetti, R. Hageman, R. Occhipinti and E. Somersalo: *Large-scale statistical estimation of metabolic parameters at steady-state*. International Conference on Computational and Mathematical Methods in Science and Engineering (CMMSE) proceedings, 2005.

Presentations

- International Congress on Industrial and Applied Mathematics (ICIAM).
Mini-symposium Presentation, July 2007.
D. Calvetti, R. Hageman and E. Somersalo: *Dynamic Bayesian Sensitivity Analysis in Myocardial Metabolism*.
- Joint Mathematics Meeting, AWM workshop.
Poster Presentation, January 2007.
R. Hageman, E. Somersalo and D. Calvetti: *Large scale dynamic Bayesian parameter estimation and sensitivity analysis in cardiac metabolism*.
- Biomedical Engineering Society (BMES) annual meeting.
Poster Presentation, October 2006.
D. Calvetti, R. Hageman and E. Somersalo: *Bayesian sensitivity analysis in cardiac metabolism*.
- SIAM Conference on the Life Sciences.
Contributed Presentation, July 2006.
D. Calvetti, R. Hageman and E. Somersalo: *Large scale parameter estimation for the dynamic cardiac metabolism during ischemia*.
- Research Showcase: Case Western Reserve University.
Poster presentation, January 2006.
D. Calvetti, R. Hageman and E. Somersalo: *Large scale statistical parameter estimation and stability analysis for complex systems with an application to metabolic models*.
- Joint Mathematics Meeting.
Poster presentation, January 2002.
R. Hageman, K. Kline, L. Wilkins and C. Larson: *Modeling the Dynamics of a Motorized Wheelchair*.