

# JUTTA BIKOWSKI

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**citizen status:** Resident of Germany with J-1 visa

## Dept. Address

Colorado State University  
Department of Mathematics  
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## Home Address

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## Research Interests

I am mainly interested in **inverse problems**, in their theoretical and computational aspects. Currently, I am implementing a direct algorithm for three dimensional Electrical Impedance Tomography (EIT or ERT) reconstructions. I also worked on linearization methods for EIT and reconstructions of super-resolution images. Further areas of interest include scientific computing, numerical algorithms, partial differential equations and optimization.

## Education

**Ph.D. in Mathematics,** 2008 (expected)  
Colorado State University, Fort Collins, CO.

Dissertation topic: Reconstructions in Electrical Impedance Tomography in two and three dimension, from Calderón to the d-bar method.

**M.S. in Mathematics,** 2004  
Colorado State University, Fort Collins, CO.

Thesis title: A 3D Reconstruction Algorithm Employing the Fast Multipole Method For EIT On Planar Electrode Arrays

**Diplom (FH) in applied Mathematics (equivalent to B.S.)** 2001

Fachhochschule Stuttgart - Hochschule für Technik, Germany,  
Thesis title: "Generierung hoch aufgelöster Bilder aus Bildfolgen" (Construction of High Resolution Images from Low Resolution Image Sequences)

## Teaching

**Instructor (Teaching Assistant)** 08/2002–08/2007

Department of Mathematics, CSU, Fort Collins  
Instructor for the following courses:

- Real Analysis \*
- Differential Equations \*
- Calculus I,II and III
- Advanced Mathematics for Biologists \*

\* created/organized syllabus and course policy, wrote exams and quizzes

## Publications

*2D EIT Reconstructions using Calderón's method*, with Jennifer Mueller, Inverse Problems and Imaging, submitted

*Electrical impedance tomography and the fast multipole method* with Jennifer Mueller, Proceedings of SPIE, Volume 5562, October 2004, pp. 129-140 .

## Talks

*Back to the roots: 2D EIT reconstructions using Calderón's method*, Symposium on Inverse Problems Honoring Alberto Calderón, 2007, Rio de Janeiro

*Back to the roots: 2D EIT reconstructions using Calderón's method*, Applied Math Seminar, Colorado State University, Dec 2007, Fort Collins

*Electrical Impedance Tomography and the pioneering work of A. Calderón*, SIAM Front Range Applied Mathematics Student Conference, 2007, Denver.

*Electrical Impedance Tomography and Fast Multipole Method*, SIAM Conference on Imaging Science 2004, Salt Lake City.

*Electrical Impedance Tomography and Fast Multipole Method*, SPIE 49th Annual Meeting, 2004, Denver.

*Electrical Impedance Tomography*, SIAM Front Range Applied Mathematics Student Conference, 2005, Denver.

*Electrical Impedance Tomography*, Seminar from students for students, 2005, Colorado State University

*Construction of High Resolution Images from Low Resolution Image Sequences*, Seminar from students for students, 2002, Colorado State University

## Work Experience

**Etas GmbH, Stuttgart, Germany** 07/2000–09/2000  
Designed and developed a tool to analyse and visualize micro processor programs according to customer specifications.

**Etas GmbH, Stuttgart, Germany** 03/1999–08/1999  
Developed a tool to simulate the conversion of float point operations to integer operations as on a micro processor.

**Bosch GmbH, Schwieberdingen, Germany** 09/1998–02/1999  
Developed guidelines to improve the data quality of Pro/ENGINEER data.

## Awards and Honors

Fulbright Scholarship 08/2001–05/2002

Travel grants:

- Applied Inverse Problems (AIP), Vancouver, 2007 (NSF)
- Symposium on Inverse Problems Honoring Alberto Calderon, Rio de Janeiro, Brazil, 2007
- Summer Graduate School on Inverse Problems, Seattle, 2005
- Graduate Student Mathematical Modeling (GSMM) Camp, RPI, 2005
- SIAM Conference on Imaging Science, Utah, 2004 (Math department)

Award, HFT Stuttgart, Germany 08/2001  
Recognition for excellence in the studies.

BaföG among 30% of all students who finish in 2001 as Diplom Mathematiker (FH)

Colorado State University Graduate Research Assistant, Summer 2003 and Fall 2007

**Workshops**      **Workshop on Inverse Problems,** 2007  
Colorado State University, Colorado (Participant/Co-organizer for special program).

**Graduate Student Mathematical Modeling (GSMM) Camp,** 2005  
Rensselaer Polytechnic Institute, (Participant).

**Summer Graduate School on Inverse Problems,** 2005  
University of Washington, Seattle (Participant).

**Memberships**      American Mathematical Society, Student Membership  
Society for Industrial and Applied Mathematics, Student Membership

**Skills**            *Languages:* German (native), English.

*Programming Languages:* C, C++, Java, Fortran, MATLAB, HTML, L<sup>A</sup>T<sub>E</sub>X.

*Computer systems:* UNIX, Windows

**References**      Dr. Jennifer Mueller  
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Further references are available upon request.