

# RESUMÉ

## Regina Hannemann

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**Skills Summary:** Thorough understanding of electromagnetic waves and elastodynamic waves in inhomogeneous anisotropic solids. Experience developing electromagnetic and elastodynamic simulation and imaging software using modern software engineering methods in a geographically and culturally diverse team. Knowledge of C++, Java, Fortran, and the associated programming paradigms hosted on multiple operating systems (Linux, Unix, Windows). Teaching experience due to responsibilities for German undergraduate courses (taught in German) and graduate courses (taught in English) in an international masters program at the University of Kassel.

Management, interpersonal, intercultural, and negotiation skills acquired through participation in a European research project and work experience in Germany and the United States. Besides being fluent in both German (mother tongue) and English, I have fair knowledge of French (7 years at school) and basic knowledge of Norwegian.

### Education:

- Ph.D. (magna cum laude), Chair of Electromagnetic Theory, Dept. of Electrical Engineering, University of Kassel, Germany, 2001. Title of thesis: *Modeling and Imaging of Elastodynamic Wave Fields in Inhomogeneous Anisotropic Media — An Object-Oriented Approach*.
- Diploma in Electrical Engineering, Electrooptics and Electrical Discharges, Dept. of Electrical Engineering, Ruhr-University Bochum, Germany, 1996. Title of thesis: *Optical and digital acquisition and interpretation of the emission spectra of a rf excited CO<sub>2</sub> slab laser* (in German).

### Positions Held:

- Post-Doctoral Scholar, Department of Electrical Engineering, University of Kentucky, Lexington, KY, USA (2002 – August 2004)  
Development of high-order boundary integral methods combined with fast solution techniques (Quadrature-Sampled Pre-Corrected Fast Fourier Transform: QSPCFFT) for the analysis of printed circuit devices in layered media. The goal of this research is the accurate analysis of electrically large printed circuits with error control.  
Furthermore, the maintenance and development of MeshTool, which is a mesh preprocessor written in Java and C++. It is capable of generating high-order meshes from mesh data output by standard tools such as I-DEAS. It serves as an interface between these tools and the other numerical software used by the Computational Electromagnetics Group at the University of Kentucky, such as the aforementioned QSPCFFT project.
- Post-Doctoral Scholar, Chair of Electromagnetic Theory, Dept. of Electrical Engineering, University of Kassel, Germany (2001 – 2002)  
Verification of the method developed in previous projects for the improvement of non-destructive testing with ultrasound of austenitic welds by application to real welds with real cracks. BMBF (Bundesministerium für Bildung und Forschung — German Federal Ministry of Education and Research) funded project, jointly carried out in cooperation with Fraunhofer-Gesellschaft (Fraunhofer Institute) Dresden/Germany and Saarbrücken/Germany. Responsibilities included modeling of elastodynamic wave fronts with the Elastodynamic Finite Integration Technique (EFIT) for different setups, generation of appropriate snap shot movies, interpretation of the

simulated data, and interfacing with research partners. Parts of the project have been performed by students supervised by me.

- Research Assistant, Chair of Electromagnetic Theory, Dept. of Electrical Engineering, University of Kassel, Germany (1996 – 2001)  
Signal Processing and Improved Qualification for Non-Destructive Testing of Ageing Reactors. Project funded by the European Union, with university and industrial partners in different countries of Europe. Responsibilities included the development, design, and implementation of a Synthetic Aperture Focusing Technique (SAFT) for inhomogeneous anisotropic welds, supervising graduate and undergraduate students, and interfacing with research partners.

### Teaching Experience:

- Teaching Assistant, Electromagnetic Field Theory (EFT), Course for Graduate Students, teaching language: English. Responsibilities included preparing and presenting exercises, preparing homework solutions, and preparing and grading exams. Exercises taught in Spring 2001, Spring 2000, Fall 1998, and Spring 1998.
- Teaching Assistant, Mathematical Foundations of Electromagnetic Field Theory, Course for Graduate Students, teaching language: English. Responsibilities included preparing and presenting exercises, preparing homework solutions, and preparing and grading exams. Exercises taught in Spring 2001, Spring 2000, Spring 1999, Fall 1998, and Spring 1998.
- Lecturer, Mathematical Foundations of Electromagnetic Field Theory, Course for Graduate Students, teaching language: English. Lectured on a number of subjects including vector analysis, dyadics, Fourier transforms. Lecture taught in Spring 1999, and Spring 1998.
- Teaching Assistant, Electromagnetic Field Theory (EFT), Course for Undergraduate Students, teaching language: German. Responsibilities included preparing and presenting exercises, preparing homework solutions, and preparing and grading exams. Exercises taught in Fall 2000, Fall 1999, Fall 1998, and Fall 1997.
- Supervision of
  - 1 diploma thesis (equivalent to master thesis)
  - 2 undergraduate theses

### Professional Activities and Service:

- Chair of the IEEE Tomiyasu Award Committee (2004, 2005)
- Active Member of the IEEE Tomiyasu Award Committee (2002, 2003)

### Professional Affiliations:

- Active Member of IEEE (1993 – present)

### Honors and Awards:

- 2002 Lise-Meitner Award of the State of Hesse, Germany