

## Introduction

Steven B. Damelin, Director, Unit for Advances in Mathematics and Applications, College of Science and Technology, Georgia Southern University, Statesboro, GA 30460

## Research Profile

My research interests over the last 10 years address the broad interplay between subjects in pure mathematics and their links to interdisciplinary sciences. I am presently supported by:

- The Analysis Division in the Division of Mathematical Sciences, NSF: (1) NSF-DMS-0555839(Analysis) (PI-4 years, expires 2010)), (2) NSF-DMS-REU- 0653331(analysis) (PI-1 year, expires 2008).
- EPSRC (EP/C000285(PI-3 years, expires 2008).
- Airforce Office of Research (PI- Summer 2007).

I work in several mathematical areas. These are:

- Harmonic analysis, Minimal energy configurations (which occur for example in crystal structure, co-variance and random matrices), Discrepancy, Numerical analysis, Approximation theory, Combinatorial designs.
- Differential Geometry, Inverse Problems, Inverse scattering.
- Computer Vision, Recognition Problems (which occur in medical imaging and target and sensor recognition), Networks (in particular self healing networks, bioinformatic networks), Clustering, Sampling, Gene/protein interaction, Computational intelligence.
- I was the 2005-2006 New Directions Professor of Imaging at the Institute for Mathematics and its Applications, University of Minnesota funded through NSF-DMS-0439734 and hold a number of other external and internal awards which are listed in my curriculum vitae.
- I am the Founder and Present Director of the Unit for Advances in Mathematics and its Applications (UAIM), College of Science and Technology, Georgia Southern University. The unit is linked via my webpage <http://math.georgiasouthern.edu/~damelin/applcenter.html> and via the Department of Mathematical Sciences and College of Science and Technology homepages.

The Unit for Advances in Mathematics and its Applications (UAIM) exists within the College of Science and Technology at Georgia Southern University for the purpose of fostering advanced research in all areas of mathematics which have the potential for education and applications, graduate

and undergraduate research, for links with interdisciplinary institutes, for links with departments across the college, and for the purpose of facilitating the transfer of knowledge between the academic and industrial sectors. The unit currently has affiliate members from four departments in the college; The Department of Chemistry, The Department of Mathematical Sciences, The Department of Mechanical and Electrical Engineering Technology and the Department of Physics as well as members from outside the university (by courtesy of the College of Science and Technology). UAIM has an advisory board with both internal and external board members. Our external board members are distinguished scientists from top rate institutions including the University of Maryland, the University of Michigan, Caltech, Washington University, the University of Washington, Northeastern and the Illinois Institute of Technology. The Board also contains members from the IMA (Institute for Mathematics and its Applications), AIM (American Institute of Mathematics) and from the Norbert Wiener Center for Harmonic Analysis.

Since my Ph.D, I have secured research funding from the National Science Foundation (NSF), The Airforce Office of Research (AFRL), The British Engineering and Research Council (EPSRC), The Belgium Flounders Research Foundation (FWO), the South African Research Foundation (SSF) and have also obtained several internal grants and fellowships from the University of the Witwatersrand and Georgia Southern University. My research efforts have resulted in over 60 peer reviewed research papers (published, submitted and in preparation), one published book in integrable systems (with X. Ma, USF), one book in preparation on signal processing, wavelets and imaging (with W. Miller, IMA-UMN) and one monograph in preparation on combinatorial designs and their applications (with a former Masters Student of mine, Jeff Taylor). I have worked successfully with 30 national and international collaborators over 4 continents and have given over 97 research talks in 4 continents. I have several past and current undergraduate/masters/Ph.D research students and have or am working with many postdocs.

My research, teaching and service is summarized in detail on my cv which can be found on my homepage <http://math.georgiasouthern.edu/~damelin> and the reviews of my research can be found, for the most part, in ams mathreviews.