INSTITUTE FOR MATHEMATICS AND ITS APPLICATIONS

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The IMA was founded by and receives major support from the National Science Foundation.

IMA NEWSLETTER # 334

1–31 August 2004

2004–2005 Program

MATHEMATICS OF MATERIALS AND MACROMOLECULES: MULTIPLE SCALES, DISORDER, AND SINGULARITIES

See http://www.ima.umn.edu/matter/ for a full description of the 2004–2005 program on Mathematics of Materials and Macromolecules: Multiple Scales, Disorder, and Singularities

IMA schedules are subject to revision, particularly during workshops. See http://www.ima.umn.edu/~seminar/sched and http://www.ima.umn.edu/newsltrs/ for the latest scheduling information.

PART I: NEWS AND NOTES

IMA Workshop:

2004 Mathematical Modeling in Industry - A Workshop for Graduate Students

9–18 August 2004
Organizers: Fernando Reitich (University of Minnesota), Fadil Santosa (University of Minnesota),

See http://www.ima.umn.edu/modeling/mm04.html

New directors at the IMA

This summer Arnd Scheel is replacing Fadil Santosa as Deputy Director of the IMA, and Debra Lewis is replacing Scot Adams as Associate Director of the IMA. Arnd is Professor of Mathematics at the University of Minnesota. His research interests include dynamics of partial differential equations, pattern formation, nonlinear waves, homoclinic and heteroclinic phenomena, and symmetry in dynamical systems. Debra is Professor of Mathematics at the University of California at Santa Cruz, and has taken a two year leave to come to the IMA. Her research focuses on geometric mechanics, particularly Hamiltonian and Lagrangian systems, and also the design of numerical algorithms for such systems.

Fadil Santosa has been involved in directing the IMA since 1997. His exemplary service has had a lasting impact on many aspects of the IMA. He remains the director of the Minnesota Center for Industrial Mathematics, and we look forward to close interaction with him in that and other capacities. Scot Adams has completed a two-year term as associate director, and is now serving as director of graduate studies in the University of Minnesota School of Mathematics. Warm thanks and best wishes to both.

New thematic program

The transition from the 2003–2004 thematic program "Probability and Statistics in Complex Systems" to the 2004–2005 program "Mathematics of Materials and Macromolecules: Multiple Scales, Disorder, and Singularities" is underway.

The IMA will be hosting a record number of long term visitors this year. The first arrivals in the Materials program are Peter J. Sternberg (August 15, 2004 – June 30, 2005) of the Mathematics Department of Indiana University and Matthias Gobbert (August 25 – December 24, 2004) of the Department of Mathematics and Statistics of University of Maryland – Baltimore County. Prof. Sternberg is the organizer of the Focus Area on Singularities and an organizer of the IMA Workshop "Singularities in Materials".

IMA postdoctoral members: arrivals and departures

The first arrival among our new postdoctoral members is Peter Philip, most recently of the Weierstrass Institute in Berlin; Dr. Philip will be working with Corning as a member of the Industrial Postdoctoral Program. Postdoctoral members Gerard Awanou, Tim Garoni, Chuan-Hsiang Han, and Lea Popovic will be continuing for their second year at the IMA. Dr. Han will be moving to the Industrial Postdoctoral Program, working with the Ford Motor Company.

Several IMA postdoctoral members are completing their appointments and moving on to new positions. Karen Ball returns to the Department of Mathematics of Indiana University; Antar Bandyopadhyay joins the Department of Mathematics of Chalmers University of Technology, Göteborg; Olga Brezhneva joins the Mathematics and Statistics Department of the University of Miami, Ohio; Herve Kerivin joins the Department of Mathematics and Computer Science of Université de Clermont-Ferrand 2, France; Tamon Stephen joins the Advanced Optimization Lab of the Department of Computing and Software at McMaster University; Jing Wang joins Johnson & Johnson Co. Lili Ju, of the Industrial Postdoctoral Program, joins the Department of Mathematics of the University of South Carolina.

IMA Website

Comments or suggestions concerning the IMA website may be addressed to
`webmaster@ima.umn.edu`.
In particular, we appreciate any information about World-Wide Web links relevant to current and upcoming IMA programs.

PART II: Schedule for 1–31 AUGUST 2004

Monday, August 9, through Wednesday, August 18

IMA Workshop:

2004 Mathematical Modeling in Industry – A Workshop for Graduate Students

9–18 August, 2004
Organizers: Fernando Reitich (University of Minnesota), Fadil Santosa (University of Minnesota),

See http://www.ima.umn.edu/modeling/mm04.html

The workshop is designed to provide graduate students and qualified advanced undergraduates with first hand experience in industrial research. Students will work in six teams of up to six students under the guidance of a mentor from industry. The mentor will help guide the students in the modeling process, analysis and computational work associated with a real-world industrial problem. The workshop will open with brief presentations of the problems by the mentors. The teams will present informal progress reports on Friday morning and submit their final reports, consisting of an oral presentation and a written report, at the end of the 10-day period.

Monday, August 9

Introduction to mentors and problems. Presentations are in Lecture Hall EE/CS 3-180.

9:00–9:30	Coffee and Registration	Reception Room EE/CS 3-176
9:30–9:40	Douglas Arnold and Organizers	Welcome and Introduction
9:40–10:00	Eric van den Berg (Telcordia Technologies)	Optimization in Wireless cdma Networks
10:00–10:20	Ann DeWitt (3M)	Data to Knowledge in Pharmaceutical Research
10:20–10:40	Thomas Grandine (Boeing)	Shape Comparison for Free-Form Geometric Modeling
10:40–11:00	Break	Reception Room EE/CS 3-176
11:00–11:20	John Hoffman (Lockheed Martin)	Problems in Nonlinear Filtering
11:20–11:40	Julio C. Spinelli (Guidant)	Governing Mathematical Model for Piezoelectric Transducer
11:40–12:00	Steven Vestal (Honeywell Laboratories)	Embedded Real-Time Safety-Critical Computer and Communication Systems
12:00	Lunch	Orchid Cafe (Thai Cuisine)

Friday, August 13

Informal progress reports, 9:30–11:50 in Lecture Hall EE/CS 3-180.

Picnic, 12:15–2:00. Location TBA

Wednesday, August 18

Final report presentations, 9:00–12:30 in Lecture Hall EE/CS 3-180.

Pizza party, 12:30–2:00 in Lind 400

WORKSHOP PARTICIPANTS

Organizers: Fernando Reitich (University of Minnesota) and Fadil Santosa (University of Minnesota).

Mentors: Ann Dewitt (3M), Thomas Grandine (Boeing Company), John R. Hoffman (Lockheed Martin), Julio C. Spinelli (Guidant Corporation), Eric van den Berg (Telcordia Technologies), and Steven Vestal (Honeywell Laboratories).

Students: Jung-ha An (University of Florida), Viktoria A. Averina (University of Minnesota), Li Bai (University of California, Irvine), Saziye Bayram (SUNY at Buffalo), Robert Buckingham (Duke University), Giulio Ciraolo (University degli Studi de Firenze), Jessica Conway (Northwestern University), Novie Darmawan (University of Texas – Austin), German Enciso (Rutgers University), Harshini Fernando (Texas Tech University), Wondimagegnehu Geremew (Wayne State University), Derek Hansen (Rutgers University), Theresa Hayter (Portland State University), Volodymyr Hrynkiv (University of Tennessee), Ao Jiang (University of Delaware), Justin Kao (Northwestern University), Ali Khoujmane (Texas Tech University), Gary Kilper (University of Chicago), Hye-Ryoung Kim (Seoul National University (BK 21 Math-SNU)), Harun Kurkcu (University of Minnesota), Guo Luo (Ohio State University), Bernardo Pagnoncelli (Puc-RJ), Rochelle Pereira (University of Chicago), Sonja Petrovic (University of Kentucky), Deena Schmidt (Cornell University), Jaffar Ali Shahul Hameed (Mississippi State University), Joshua Strodtbeck (University of Kentucky), Wei Xiong (Ohio State University), Jiaqi Yang (University of Minnesota), Noam Zeev (University of Delaware), Ivan Zorych (New Jersey Institute of Technology).

See also URL: `http://www.ima.umn.edu/people/`