

INSTITUTE FOR MATHEMATICS AND ITS APPLICATIONS

University of Minnesota

400 Lind Hall

207 Church Street S.E.

Minneapolis, Minnesota 55455

FAX (612) 626-7370

telephone (612) 624-6066

e-mail: ima-staff@ima.umn.edu

IMA Schedules via finger: finger_seminar@ima.umn.edu

Newsletters, Updates and preprints are available via

anonymous ftp: <ftp://www.ima.umn.edu>, [www: http://www.ima.umn.edu/](http://www.ima.umn.edu/)

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

IMA NEWSLETTER # 333

1-31 July 2004

2003-2004 Program

PROBABILITY AND STATISTICS IN COMPLEX SYSTEMS

See <http://www.ima.umn.edu/complex/> for a full description of the 2003-2004 program on Probability and Statistics in Complex Systems: Genomics, Networks, and Financial Engineering

IMA schedules are subject to revision, particularly during workshops. See

<http://www.ima.umn.edu/~seminar/sched> and

<http://www.ima.umn.edu/newsletters/> for the latest scheduling information.

PART I: NEWS AND NOTES

New representative to the IAB from Ford

Erica Klampfl has replaced David Chock as Ford's representative on the IMA Industrial Advisory Board. Thanks to David for all of his help over the years, and we welcome Erica to the Board.

<p>Special IMA Short Course:</p>

<p>Computational Topology</p>

<p>6-16 July 2004</p>

<p>Speakers: Herbert Edelsbrunner (Duke University), John L. Harer (Duke University).</p>

<p>See http://www.ima.umn.edu/new-directions/2004NDshort-course/</p>
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PARTICIPATING INSTITUTIONS: Consiglio Nazionale delle Ricerche (CNR), Georgia Institute of Technology, Indiana University, Iowa State University, Kent State University, Lawrence Livermore National Laboratory, Los Alamos National Laboratory, Michigan State University, Mississippi State University, Northern Illinois University, Ohio State University, Pennsylvania State University, Purdue University, Rice University, Sandia National Laboratories, Seoul National University (BK21 Math-SNU), Seoul National University (SRCCS), Texas A&M University, University of Chicago, University of Cincinnati, University of Delaware, University of Houston, University of Illinois (Urbana), University of Iowa, University of Kentucky, University of Maryland, University of Michigan, University of Minnesota, University of Notre Dame, University of Pittsburgh, University of Wisconsin, University of Wyoming, Wayne State University.

PARTICIPATING CORPORATIONS: Boeing, ExxonMobil, Ford, General Electric Company, General Motors, Honeywell, IBM, Lockheed Martin, Lucent, Motorola, Schlumberger, Siemens, Telcordia Technologies, 3M.

Version of July 1, 2004

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 appropriate to current and upcoming IMA programs.

PART II: Schedule for 1–31 JULY 2004

Thursday, July 1

The 10:30 IMA break will be in Lind Hall 400.

Friday, July 2

The 10:30 IMA break will be in Lind Hall 400.

Monday, July 5

Independence Day, a University of Minnesota holiday. IMA offices will be closed.

Tuesday, July 6

Special IMA Short Course: Computational Topology

6-16 July 2004

Speakers: Herbert Edelsbrunner (Duke University), John L. Harer (Duke University).

See <http://www.ima.umn.edu/new-directions/2004NDshort-course/>

We understand Computational Topology as the development of algorithmic tools implementing topological concepts for use in the sciences and engineering. This is different from using the computer to study topological questions although there is the potential for a beneficial symbiosis between the two efforts. The history of Computational Topology is short. It grew out of Computational Geometry as researchers expanded into applications where significant topological issues arise. The two such areas discussed in this course are structural molecular biology and geometric modeling. Both have connections to industries of substantial economical size.

A primary goal in this course is to develop a broad picture in which algorithmic tools connect pure mathematics with scientific applications. Our utilitarian view is that the application should drive the mathematics, the algorithms and the software development.

WEEK 1 OF NEW DIRECTIONS SHORT COURSE

All talks are in Lind Hall 409.

8:30	Introduction	
10:30	Lecture	Delaunay triangulation
1:00	Lecture	Alpha shapes
2:30	Software Demos and Discussions	
3:45	Group Photo	
4:00	Reception	

Wednesday, July 7

All talks are in Lind Hall 409.

8:30	Lecture	Wrap
10:30	Lecture	Crust
1:00	Lecture	Witness complexes
2:30	Software Demos and Discussions	

Thursday, July 8

All talks are in Lind Hall 409.

8:30	Lecture	Homology and Reduction Algorithm
10:30	Lecture	Persistence and Stability
1:00	Lecture	Betti numbers and Union-Find

1:00 **Wrap up I**

2:30 **Wrap up II**

Monday, July 19

The 3:00 IMA break will be in Lind Hall 400.

Tuesday, July 20

The 10:30 IMA break will be in Lind Hall 400.

Wednesday, July 21

The 10:30 IMA break will be in Lind Hall 400.

Thursday, July 22

The 10:30 IMA break will be in Lind Hall 400.

Friday, July 23

The 10:30 IMA break will be in Lind Hall 400.

Monday, July 26

The 3:00 IMA break will be in Lind Hall 400.

Tuesday, July 27

The 10:30 IMA break will be in Lind Hall 400.

Wednesday, July 28

The 10:30 IMA break will be in Lind Hall 400.

Thursday, July 29

The 10:30 IMA break will be in Lind Hall 400.

Friday, July 30

The 10:30 IMA break will be in Lind Hall 400.

PART III: CURRENT IMA PARTICIPANTS

FIRST YEAR POSTDOCTORAL MEMBERS

NAME	PREVIOUS INSTITUTION
Gerard Awanou	University of Georgia
Karen Ball	Indiana University
Antar Bandyopadhyay	UC Berkeley
Tim Garoni	University of Melbourne
Chuan-Hsiang Han	North Carolina State University
Lea Popovic	UC Berkeley

SECOND YEAR POSTDOCTORAL MEMBERS

NAME	PREVIOUS INSTITUTION
Olga Brezhneva	Russian Academy of Sci.
Herve Kerivin	University Blaise Pascal-France
Tamon Stephen	University of Michigan
Jing Wang	University of Minnesota

POSTDOCTORAL MEMBERS IN INDUSTRIAL MATHEMATICS

NAME	PREVIOUS INSTITUTION	INDUSTRIAL AFFILIATION
Lili Ju	Iowa State University	VA Hospital
Haewon Nam	Texas A & M University	GE
Jun Zhao	Texas A & M University	Schlumberger

LONG TERM VISITORS

NAME	HOME INSTITUTION
Leslie Collins	Duke University
Hans Foellmer	Humboldt Universitat zu Berlin

VISITORS IN RESIDENCE (as of 28 June 2004)

Stephen Ahearn	Macalester College	7/05/04 – 7/16/04
Dominique Attali	Domaine Universitaire	7/05/04 – 7/16/04
William Blair	Northern Illinois University	7/23/04 – 7/25/04
Albert Boggess	Texas A & M University	7/23/04 – 7/25/04
Rachael Brady	Duke University	7/12/04 – 7/14/04
Franco Brezzi	I. A. N. del C. N. R.	7/23/04 – 7/25/04
Lawrence Carin	Duke University	6/26/04 – 7/01/04
Tami Carpenter	Telcordia Technologies	7/23/04 – 7/25/04
Peter Cholak	University of Notre Dame	7/05/04 – 7/16/04
Isabel Darcy	University of Iowa	7/05/04 – 7/17/04
Gregoire Derveaux	Stanford University	6/26/04 – 7/01/04
Brenda Dietrich	IBM Corporation	7/23/04 – 7/25/04
Richard Duke	Georgia Institute of Technology	7/23/04 – 7/25/04
Herbert Edelsbrunner	Duke University	7/05/04 – 7/17/04
Paul (Andrew) Fabel	Mississippi State University	7/05/04 – 7/17/04
Patrick M. Fitzpatrick	University of Maryland	7/23/04 – 7/25/04
Albert Gilg	Siemens	7/22/04 – 7/25/04
Avraham Goldstein	City University of New York	7/05/04 – 7/18/04
Lawrence F Gray	University of Minnesota	7/23/04 – 7/25/04
Damrong Guoy	University of Illinois - Urbana-Champaign	7/05/04 – 7/17/04
John L. Harer	Duke University	7/05/04 – 7/16/04
Timothy Hodges	University of Cincinnati	7/23/04 – 7/25/04

Diane Hoffoss	University of California - San Diego	7/05/04 – 7/16/04
George Hsiao	University of Delaware	7/23/04 – 7/25/04
Michael Jolly	Indiana University	7/23/04 – 7/25/04
Menelaos Karavelas	Notre Dame University	7/09/04 – 7/09/04
David Keyes	Lawrence Livermore National Laboratories	7/23/04 – 7/25/04
Henry C. King	University of Maryland	7/05/04 – 7/16/04
Erica Zimmer Klampfl	Ford Motor Company	7/23/04 – 7/25/04
Kevin Knudson	Mississippi State University	7/05/04 – 7/16/04
Wojciech Komornicki	Hamline University	7/05/04 – 7/16/04
Nikolai Krylov	International University Bremen	7/05/04 – 7/18/04
Karl Langenberg	Gesamthochschule Kassel-Universitat	6/25/04 – 7/01/04
John-Josef Leth	Aalborg University	7/04/04 – 7/17/04
Howard A. Levine	Iowa State University	7/23/04 – 7/25/04
Debra Lewis	University of Minnesota	7/23/04 – 7/25/04
Qing H. Liu	Duke University	6/27/04 – 7/01/04
David Manderscheid	University of Iowa	7/23/04 – 7/25/04
James McClellan	Georgia Institute of Technology	6/27/04 – 7/01/04
Paul McCreary	Xavier University of Louisiana	7/05/04 – 7/17/04
Mike Melko	Northern State University	7/05/04 – 7/18/04
Rick Mifflin	ExxonMobil	7/23/04 – 7/25/04
Yuriy Mileyko	New Jersey Institute of Technology	7/05/04 – 7/16/04
Todd Moeller	Georgia Institute of Technology	7/05/04 – 7/16/04
Robert F. Morse	University of Evansville	7/05/04 – 7/16/04
Neza Mramor	University of Ljubljana	7/05/04 – 7/16/04
Junalyn Navarra-Madsen	University of Texas - Dallas	7/05/04 – 7/16/04
George C. Papanicolaou	Stanford University	6/26/04 – 7/01/04
Valerie Peterson	University of Illinois - Urbana-Champaign	7/05/04 – 7/16/04
Victor Reiner	University of Minnesota	7/06/04 – 7/10/04
Amy Roveltstadt	Corning Inc.	7/23/04 – 7/25/04
David Rusin	Northern Illinois University	7/05/04 – 7/16/04
Tariq Samad	Honeywell	7/23/04 – 7/25/04
Fadil Santosa	University of Minnesota	7/23/04 – 7/25/04
Peter Saveliev	Marshall University	7/05/04 – 7/16/04
Arnd Scheel	University of Minnesota	7/23/04 – 7/25/04
Jochen Schulz	University of Goettingen	6/26/04 – 7/01/04
Waymond Scott	Georgia Institute of Technology	6/27/04 – 7/01/04
David H. Sharp	Los Alamos National Laboratory	7/23/04 – 7/25/04
Ratnasingham Shivaji	Mississippi State University	7/23/04 – 7/25/04
Gregory Shubin	Boeing Company	7/23/04 – 7/25/04
David Snyder	Texas State University	7/05/04 – 7/16/04
De Witt L. Sumners	Florida State University	7/23/04 – 7/25/04
Chrysoula Tsogka	Stanford University	6/26/04 – 7/01/04
Hongyuan Zha	Pennsylvania State University	7/05/04 – 7/16/04
Yuxi Zheng	Pennsylvania State University	7/23/04 – 7/25/04
Ludmil Zikatanov	Pennsylvania State University	7/05/04 – 7/16/04

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