

INSTITUTE FOR MATHEMATICS AND ITS APPLICATIONS

University of Minnesota

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Newsletters, Updates and preprints are available via

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

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IMA NEWSLETTER # 321

1–30 June 2003

2002–2003 Program

OPTIMIZATION

See <http://www.ima.umn.edu/optimization/> for a full description of the 2002–2003 program on Optimization.

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 IMA Industrial Advisory Board members

Lawrence Livermore National Laboratory is now officially a member of the IMA. Xabier Garaizar, from LLNL, has joined the IAB.

2003 Summer Program

The IMA 2003 Summer Program this year is “Probability and Partial Differential Equations in Modern Applied Mathematics”, running 21 July to 1 August, organized by Edward C. Waymire (Oregon State) and Jinqiao Duan (Illinois Institute of Technology). The first week of the program concerns the use of probabilistic models in studying deterministic PDE, while the focus of the second week is on stochastic PDE.

This has been a very popular program, and, in fact, it was necessary in May to close it to further registration.

PARTICIPATING INSTITUTIONS: Centrum voor Wiskunde en Informatica (CWI), Consiglio Nazionale delle Ricerche, 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, 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 Motors, Honeywell, IBM, Lockheed Martin, Lucent, Motorola, Schlumberger, Siemens, Telcordia Technologies, 3M.

Special IMA Workshop:
The IMA at 20: Mathematics and its Impact
5-7 June 2003
Organizers: David Clark Dobson (University of Utah)
Barbara Lee Keyfitz (University of Houston)
Clarence Eugene Wayne (Boston University)
See <http://www.ima.umn.edu/ima20/>

Special IMA Short Course:
Cellular Physiology
16-27 June 2003
Speakers: Organized by the IMA.
See <http://www.ima.umn.edu/new-directions/2003NDcourse.html>

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 1–30 June 2003

Monday, June 2

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

Tuesday, June 3

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

Wednesday, June 4

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

JOINT BROWN BAG LUNCH/IMA POSTDOC SEMINAR, Lind Hall 409:

12:00

Gregory Duane
IMA

Applications of Synchronized Chaos, part II

Thursday, June 5

IMA "Hot Topics" Workshop:
The IMA at 20: Mathematics and its Impact

5-7 June 2003

Organizers: David Clark Dobson (University of Utah)
Barbara Lee Keyfitz (University of Houston)
Clarence Eugene Wayne (Boston University)

See <http://www.ima.umn.edu/ima20/>

The IMA opened its doors with its first annual program during 1982-83 and now, tens of thousands of scientific visits later, we are in our 20th year. Over these two decades, the IMA has had a tremendous effect on the advancement and impact of mathematics. This two day conference will feature talks by leading practitioners in fields of mathematics and applications where the IMA has played a major role. The overview talks will be aimed at a broad and diverse mathematical audience.

In addition, the IMA will be holding an open house and a public lecture on June 5, and a special lunch for former postdocs on June 7. Please see schedule below for details.

4:00–6:00	Open House at the IMA	4th floor Lind Hall
7:00-8:00	Public Lecture by Charles S. Peskin Courant Institute of Mathematical Sciences, New York University	Secrets of the Heart Revealed - by Mathematics and Computer Simulation Moos Tower, Room 2-650

Abstract: Secrets of the heart include the changes in the circulation occurring at birth, the muscular fiber architecture of the cardiac ventricles, the collagen fiber architecture of the heart valves, the electrical activity that coordinates and controls the heartbeat, and the vortex flow patterns of blood in the cardiac chambers. In this lecture, mathematical modeling and computer simulation will be used to reveal the principles of natural design as seen in the heart. The coupled equations of cardiac fluid and tissue mechanics will be formulated, and their solutions presented in the form of a computer animation of the beating human heart.

Friday, June 6

All talks are in Lecture Hall EE/CS 3-180 unless otherwise noted.

8:30	Coffee and Registration	Reception Room EE/CS 3-176
9:00–9:30	Opening	
9:30–10:20	Bjorn Engquist Princeton University	New classes of multi-scale methods

Abstract: Multi-scale modeling and computation is an increasingly important area of research with profound impact on computational science and applied mathematics. Recently a number of techniques have been developed that link the micro-scale and the macro-scale together in the same simulation. We will discuss a computational framework that allows for the accuracy of a micro-scale technique but with a computational cost that is closer to that of a macro-scale method.

10:30–11:00 **Coffee Break** Reception Room EE/CS 3-176

11:00–11:50 **Lai Sang Young** Deterministic Chaos
New York University

Abstract: Recent results illustrating state-of-the-art analytic, geometric and probabilistic techniques in the theory of chaos will be presented, along with a discussion of the limitations and potential applications of this theory as it stands today.

12:00–1:30 **Lunch Break**

1:30–2:20 **Andrew Odlyzko** Zeros of the Riemann zeta function: Computations and
University of Minnesota implications

Abstract: The Riemann Hypothesis is now left as the most famous unsolved problem in mathematics. Extensive computations of zeros have been used not only to provide evidence for its truth, but also for the truth of deeper conjectures that predict fine scale statistics on the distribution of zeros of various zeta functions. These conjectures connect number theory with physics, and are regarded by many as the most promising avenue towards a proof of the Riemann Hypothesis. However, as is often true in mathematics, numerical data is subject to a variety of interpretations, and it is possible to argue that the numerical evidence we have gathered so far is misleading. Whatever the truth may be, the computational exploration of zeros of zeta functions is flourishing, and through projects such as the ZetaGrid is drawing many amateurs into contact with higher mathematics.

2:30–3:20 **Wim Sweldens** Wavelets and Digital Geometry Processing
Bell Labs, Lucent Technologies

Abstract: Over the last 50 years we have seen a tremendous evolution in digital signal processing. As computers become more and more powerful they are able to deal with ever increasing amounts of digitized media. So far we have witnessed three waves: audio (1D), images (2D), and video (3D). Each wave of digitization comes with its own need for algorithms and sets off a new branch of digital signal processing. Today a fourth wave in digital signal processing is emerging: digital geometry processing. New technology exist for quickly and accurately acquiring 3D geometry of objects: A sub-millimeter digitization of Michelangelo's David for example consists of over one billion samples. While audio, images, and video are defined on Euclidean geometry and therefore often used Fourier based algorithms, this no longer works for digital geometry. We will describe new multiresolution and wavelet based geometry representations and show how they are used to build a digital geometry processing toolbox, including denoising, filtering, editing, morphing, and compression.

3:30–4:00 **Coffee Break** Reception Room EE/CS 3-176

4:00–4:50 **Margaret H. Wright** The Latest Score in Optimization
New York University

Abstract: During the past twenty years, continuous optimization has become (in the admittedly biased view of the speaker) ever more important across applied mathematics, computer science, and real-world applications of all kinds. This talk will survey selected highlights, emphasizing two areas of active research (direct search and interior-point methods) as well as the growing association between optimization and other fields of applied mathematics, computer science, science, engineering, and medicine (such as partial differential equations, combinatorial optimization, design, and data analysis).

6:00–9:00 **Anniversary Banquet** Mississippi Room, Coffman Memorial Union

Saturday, June 7

All talks are in Lecture Hall EE/CS 3-180 unless otherwise noted.

9:00–9:50	Panagiotis Souganidis University of Texas, Austin	TBA
10:00–10:30	Coffee	Reception Room EE/CS 3-176
10:30–11:20	Nancy Kopell Boston University	Rhythms of the Nervous System: From Cells to Behavior via Dynamics

Abstract: The nervous system produces rhythmic electrical activity in many frequency ranges, and the rhythms displayed during waking are tightly tied to cognitive state. This talk describes ongoing work whose ultimate aim is to understand the uses of these rhythms in sensory processing, cognition and motor control. The method is to address the biophysical underpinnings of the different rhythms and transitions among them, to get clues to how specific important subsets of the cortex and hippocampus process and transform spatio-temporal input. We focus in this talk on the gamma rhythm (30-80 Hz), which is associated with attention and awareness, and theta (4-12), associated with active exploration and learning of sequences. Via case studies, we show that different biophysics corresponds to different dynamical structure in the rhythms, with implications for function. The mathematical tools come from dynamical systems, and include the use of low-dimensional maps, probability and geometric singular perturbations.

11:30–2:30	Break	
12:00–2:00	IMA Postdoc Lunch	Gateway Alumni Center
2:30–3:20	Graeme Walter Milton University of Utah	Composite Materials: An Old Field of Study Full of New Surprises

Abstract: Composite materials have been studied for centuries, and have attracted the interest of renowned scientists such as Poisson, Faraday, Maxwell, Rayleigh, and Einstein. Their properties are usually not just a linear average of the properties of the constituent materials and can sometimes be strikingly different. The beautiful red glass one sees in old church windows is a suspension of small gold particles in glass. Sound waves travel slower in bubbly water than in either water or air. In the last few decades composites have been found to have some surprising properties. Most materials, such as rubber, get thinner when they are stretched, but it is possible to design composites which get fatter as they are stretched. Electromagnetic signals can travel faster in a composite than in the constituent phases. It is possible to combine materials which expand when heated, with voids, to obtain a material which contracts when heated. It is still an open question as to what properties can be achieved when one mixes two or more materials with known properties. This lecture will survey some of the progress which has been made and the role the IMA played in the development of the field.

3:30–4:00	Coffee Break	Reception Room EE/CS 3-176
4:00–4:50	George C. Papanicolaou Stanford University	Imaging in clutter

Monday, June 16

**Special IMA Short Course:
Cellular Physiology**

16-27 June 2003

Speakers: Organized by the IMA.

See <http://www.ima.umn.edu/new-directions/2003NDcourse.html>

Cellular physiology is an area in which mathematical techniques are greatly needed and research opportunities abound. It is a vital part of the rapidly growing field of mathematical biology.

The goal of the course will be to prepare qualified participants to start collaborative interdisciplinary research in the area. The course has two main components. One component deals with the science of mathematical biology, and covers

- The modern state of mathematical biology with emphasis on application in molecular and cell biology and physiology;
- The mathematical tools ubiquitous in modern mathematical biology;
- Prominent success and failure cases in mathematical biology.

The second component is designed to provide the participants with the ‘soft skills’ needed to in a multidisciplinary research collaboration, and involves

- Presentations on the style mathematical modeling appropriate and necessary in modern computational biology;
- Problems solving session in which the participants are engaged in modeling of typical cell biological phenomena.

The overall goal of the course will be to familiarize the participants with specific mindset and style of the field of the modern mathematical biology, and to enable them to start working in the field on their own. The overall structure of the course will be three lectures per day (two in the morning, one after lunch) followed by a working problem solving/discussion.

An important feature of this course will be the problem solving sessions. For these the instructors will choose several biological problems from “hot” fields (*e.g.*, signal transduction, biochemical regulation), collectively identify corresponding modeling problems, “brain-storm” the model, formulate model equations and delineate their solutions, analyze the solutions together. An attempt will be made so that these sessions represent a realistic demonstration of the interaction between theoreticians and experimentalists.

Additional lectures, meant to provide the participants with valuable insights into the field, are more informational in nature, and will be more in the format of discussion sessions. An invaluable part of the program will be informal discussions with the participants, in which the instructors will help them to bridge their own current mathematical research with biological applications and suggest ways to find collaborators and new topics.

Textbook resources for this material:

1. J. Keener and J. Sneyd, *Mathematical Physiology*, Springer 1998,
2. C. Fall, E. S. Marland, J. M. Wagner, and J. J. Tyson, *Computational Cell Biology*, Springer, 2002.

All talks are in Lind Hall 409 unless otherwise noted.

Typical Daily Schedule for the IMA New Directions Short Course	
8:30-10 am	General Lecture
10-10:30 am	Break
12 noon-1:00 pm	Lunch
1:00-2:00 pm	Topical Lecture
2:00-2:30 pm	Break
2:30-4:30 pm	Problem/Brainstorming Session
On Monday, June 16, 4:00 pm there will be a reception at 400 Lind Hall. Food will be served by either Surdyk's or Cossetta's or a combination of both.	

Suggested Topics for the IMA New Directions Short Course				
Day	Lecture 1	Lecture 2	Topical Lecture	Problem Ideas
6/16	Introductions Enzyme kinetics	Bacterial chemotaxis	James Keener biochemical switches lac operon	quorum sensing in V.fisheri
6/17	Cellular homeostasis	molecular motors I	Kathryn Tosney growth cone motility	homeostasis of T. californicus
6/18	Channels, Gates Transporters	molecular motors II	Alexander Mogilner model of cell crawling: nematode sperm cell	survival mechanism of h. pylori
6/19	Excitability HH Theory	muscle contraction		
6/20	Calcium EC Coupling	physics of biological gels	Bob Tranquillo chemotaxis	(no problem session today)
6/23	Cell Cycle	cell migration	Robert Sheaff cell cycle control	regul. & differ. of urothelial cells
6/24	Axons and Waves	neutrofil chemotaxis	Clifton Ragsdale neural connection	calcium waves in C. elegans
6/25	Intercellular communication	large gen & biochem networks	Ron Siegel gel drug delivery	action poten. propag. in frog myocytes
6/26	Bursting Biochem. oscill. circadian cycles	modeling morphogenesis	Lihsia Chen cell adhesion	genetic basis of circadian rhythms
6/27	Biochemical signalling cAMP, E. coli	morphogenesis in Drosophila	TBA: participant talk	(no problem session today)

4:00

IMA Reception

IMA East, 400 Lind Hall

Tuesday, June 17

All talks are in Lind Hall 409 unless otherwise noted.

Wednesday, June 18

All short course talks are in Lind Hall 409 unless otherwise noted.

BROWN BAG SEMINAR, Lind Hall 401:

12:00

Luis Goddyn
Simon Fraser University

A Trilogy of Missing Algorithms

Abstract: I present three problems for which there are no known good algorithms for constructing a solution.

First is a "list colouring" extension of the Four Colour Theorem. Let G be a 3-regular graph embedded on the plane, where each edge of G has been provided with a list of three "allowed" colours. Find a proper edge colouring of G where each edge gets a colour from its own list.

Second is the following "faithful circuit cover" problem. Let G be a graph with multiple edges allowed. Find a decomposition of the edges of G into circuits of length at least three.

Third is a type of max-flow min-cut problem. Let G be a graph embedded on a surface (such as the double torus). Find the shortest circuit in G which is a contractible curve in the surface.

The first two problems are known to have solutions (under certain natural hypotheses), but the existence proofs are algebraic or otherwise nonconstructive. The third problem can be solved on the projective plane, torus, and Klein bottle.

Note that Brown Bag Seminar is in Lind 401, NOT Lind 409, this week.

Thursday, June 19

All talks are in Lind Hall 409 unless otherwise noted.

Friday, June 20

All talks are in Lind Hall 409 unless otherwise noted.

Monday, June 23

All talks are in Lind Hall 409 unless otherwise noted.

All talks are in Lind Hall 409 unless otherwise noted.

Tuesday, June 24

All talks are in Lind Hall 409 unless otherwise noted.

Wednesday, June 25

All talks are in Lind Hall 409 unless otherwise noted.

Thursday, June 26

All talks are in Lind Hall 409 unless otherwise noted.

Friday, June 27

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

Monday, June 30

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

PART III: CURRENT IMA PARTICIPANTS

FIRST YEAR POSTDOCTORAL MEMBERS

NAME	PREVIOUS INSTITUTION
Olga Brezhneva	Russian Academy of Sci.
Lisa Evans	Georgia Tech
Balaji Gopalakrishnan	Georgia Tech
Herve Kerivin	University Blaise Pascal-France
Tamon Stephen	University of Michigan
Jing Wang	University of Minnesota

SECOND YEAR POSTDOCTORAL MEMBERS

NAME	PREVIOUS INSTITUTION
Dacian Daescu	University of Iowa
Gregory S. Duane	University of Colorado
Daniel Kern	University of Illinois-Chicago
M. Yvonne Ou	University of Delaware
Toshio Yoshikawa	University of Utah

POSTDOCTORAL MEMBERS IN INDUSTRIAL MATHEMATICS

NAME	PREVIOUS INSTITUTION	INDUSTRIAL AFFILIATION
Yusuf Altundas	University of Pittsburgh	Schlumberger
Lili Ju	Iowa State University	VA Hospital
Aurelia Minut	Michigan State University	3M
Haewon Nam	Texas A & M University	GE
Jun Zhao	Texas A & M University	Schlumberger

LONG TERM VISITORS

NAME	HOME INSTITUTION
Montaz Ali	Witwatersrand University
Collette Coullard	Northwestern University
Luis A. Goddyn	Simon Fraser University
Peh Ng	University of Minnesota

VISITORS IN RESIDENCE (as of 27 May 2003)

ADAMS, SCOT	U of Minnesota	SEP 1 02 – JUN 30 03
ALEXIADES, VASILIOS	U of Tennessee	JUN 15 03 – JUN 27 03
ARNOLD, DOUGLAS N.	U of Minnesota	SEP 1 02 – JUN 30 03
ARONSON, DONALD	U of Minnesota	SEP 1 02 – JUN 30 03
BATES, PETER	Michigan State U	JUN 6 03 – JUN 8 03
BERTSCH, MICHIEL	CNR	JUN 5 03 – JUN 9 03
BLAIR, WILLIAM	Northern Illinois U	JUN 7 03 – JUN 9 03
BOGGESS, ALBERT	Texas A&M U	JUN 5 03 – JUN 9 03
BROADBRIDGE, PHILIP	U of Delaware	JUN 5 03 – JUN 9 03
BUDU, PAULA	Duke U	JUN 15 03 – JUN 27 03
BUECHLER, STEVEN	U of Notre Dame	JUN 15 03 – JUN 27 03
CALDERER, M. CARME	U of Minnesota	SEP 1 02 – JUN 30 03
CASTILLO, PAUL	Lawrence Livermore National Lab	JUN 15 03 – JUN 27 03
CHADAM, JOHN	U of Pittsburgh	JUN 5 03 – JUN 9 03
CHOCK, DAVID	Ford Motor Company	JUN 6 03 – JUN 9 03
CORLETTE, KEVIN	U of Chicago	JUN 7 03 – JUN 8 03
COULLARD, COLLETTE	Northwestern U	SEP 1 02 – JUN 30 03
COWSAR, LAWRENCE	Lucent Technologies	JUN 5 03 – JUN 9 03
DAESCU, DACIAN	IMA	SEP 1 02 – JUN 30 03
DIETRICH, BRENDA	IBM Corporation	JUN 8 03 – JUN 9 03
DOLD, JOHN	UMIST	JUN 14 03 – JUN 28 03
ELMER, CHRISTOPHER	New Jersey Inst. of Tech.	JUN 15 03 – JUN 27 03
ENGQUIST, BJORN	Princeton U	JUN 5 03 – JUN 7 03
FITZGIBBON, WILLIAM	U of Houston-U Park	JUN 6 03 – JUN 9 03
FITZPATRICK, PATRICK	U of Maryland, College Park	JUN 7 03 – JUN 9 03
FLEMING, PHIL	Motorola, Inc.	JUN 6 03 – JUN 9 03
FRENCH, DONALD	U of Cincinnati	JUN 15 03 – JUN 27 03
GARAIZAR, XABIER	Lawrence Livermore National Lab	JUN 5 03 – JUN 9 03
GILG, ALBERT	Siemens	JUN 5 03 – JUN 9 03
GRIFFEATH, DAVID	U of Wisconsin at Madison	JUN 5 03 – JUN 9 03
GULLIVER, ROBERT	U of Minnesota	JUN 6 03 – JUN 7 03
GUO, YIXIN	U of Pittsburgh	JUN 15 03 – JUN 28 03
HANSEN, LOWELL	Wayne State U	JUN 5 03 – JUN 9 03
HIMONAS, ALEX	U of Notre Dame	JUN 5 03 – JUN 8 03
HUISINGA, WILHELM	Free Institute (FU) Berlin	JUN 15 03 – JUN 27 03
JAIN, NARESH	U of Minnesota	JUN 5 03 – JUN 9 03
KEENER, JAMES	U of Utah	JUN 15 03 – JUN 27 03
KETTENRING, JON	Telcordia Technologies (Bellcore)	JUN 6 03 – JUN 9 03
KEYFITZ, BARBARA	U of Houston	JUN 5 03 – JUN 8 03
KOHLER, BRYNJA	U of Utah	JUN 15 03 – JUN 27 03
KOPELL, NANCY	Boston U	JUN 5 03 – JUN 7 03
KRYLOV, NICOLAI	U of Minnesota	SEP 1 02 – JUN 30 03
LEHOUCQ, RICH	Sandia National Laboratories	JUN 5 03 – JUN 8 03
LEVINE, HOWARD A.	Iowa State U	JUN 5 03 – JUN 9 03
LI, AIHUA	Loyola U New Orleans	JUN 15 03 – JUN 27 03
LI, YI	U of Iowa	JUN 4 03 – JUN 9 03
LOCKHART, DEBORAH F.	National Science Foundation	JUN 5 03 – JUN 9 03
LUCIER, BRADLEY J.	Purdue U	JUN 5 03 – JUN 9 03
LYNCH, FRANK	U of Utah	JUN 15 03 – JUN 27 03
MAKI, DAN	Indiana U	JUN 7 03 – JUN 9 03
MALISOFF, MICHAEL	Louisiana State U	JUN 15 03 – JUN 27 03
MARCH, PETER	Ohio State U	JUN 6 03 – JUN 8 03
MARIN, SAMUEL	General Motors	JUN 8 03 – JUN 9 03
MARTENSEN, BRIAN	U of Texas at Austin	JUN 15 03 – JUN 27 03

MIFFLIN, RICK	ExxonMobil	JUN 8 03 – JUN 9 03
MILTON, GRAEME	U of Utah	JUN 5 03 – JUN 8 03
MISEMER, DAVID	3M	JUN 8 03 – JUN 8 03
MOGILNER, ALEX	U of California, Davis	JUN 15 03 – JUN 27 03
MOORE, PETER	Southern Methodist U	JUN 15 03 – JUN 27 03
MULLEN, GARY	Pennsylvania State U	JUN 7 03 – JUN 8 03
NG, PEH	U of Minnesota	AUG 1 02 – JUL 31 03
NIELSEN, BJORN	Simula Research Laboratory	JUN 15 03 – JUN 27 03
NILSSEN, TRYGVE KASTBERG	Simula Research Lab	JUN 15 03 – JUN 27 03
ODLYZKO, ANDREW	U of Minnesota	JUN 5 03 – JUN 7 03
OPPENHEIMER, SETH	Mississippi State U	JUN 15 03 – JUN 27 03
PAPANICOLAOU, GEORGE C.	Stanford U	JUN 5 03 – JUN 7 03
PATTERSON, SAMUEL	Carleton College	SEP 28 02 – JUN 30 03
PESKIN, CHARLES S.	New York U	JUN 4 03 – JUN 8 03
POLING, CRAIG	Lockheed-Martin	JUN 5 03 – JUN 9 03
ROJAS, J. MAURICE	Texas A&M U	JUN 15 03 – JUN 27 03
SAMAD, TARIQ	Honeywell, Inc.	JUN 5 03 – JUN 9 03
SANDSTEDT, BJORN	Ohio State U	JUN 15 03 – JUN 27 03
SANTOSA, FADIL	U of Minnesota	SEP 1 02 – JUN 30 03
SENDIL, M. NURI	Northwestern U	SEP 2 02 – JUN 30 03
SHARP, DAVID	Los Alamos National Laboratory	JUN 7 03 – JUN 9 03
SHEN, ZHONGWEI	U of Kentucky	JUN 6 03 – JUN 8 03
SHIVAJI, RATNASINGHAM	Mississippi State U	JUN 5 03 – JUN 9 03
SOUGANIDIS, TAKIS	U of Texas at Austin	JUN 5 03 – JUN 7 03
SRITHARAN, S.S.	U of Wyoming	JUN 5 03 – JUN 9 03
STANISLAVOVA, MILENA	U of Kansas	JUN 15 03 – JUN 27 03
SVERAK, VLADIMIR	U of Minnesota	SEP 1 02 – JUN 30 03
SWELDENS, WIM	Lucent Technologies	JUN 5 03 – JUN 7 03
TECARRO, EDWIN	U St. Thomas	JUN 15 03 – JUN 27 03
TONDEUR, PHILIPPE	U of Illinois at Urbana	JUN 5 03 – JUN 9 03
TONGE, ANDREW	Kent State U	JUN 7 03 – JUN 8 03
TONGEN,	Trinity International U	ANDREW – JUN 15 03
TURI, JANOS	U of Texas-Dallas	JUN 15 03 – JUN 28 03
VENKATARAMANAN, L.	Schlumberger-Doll Research	JUN 5 03 – JUN 9 03
VERWER, JAN	CWI	JUN 4 03 – JUN 7 03
WAYNE, C. EUGENE	Boston U	JUN 5 03 – JUN 8 03
WRIGHT, MARGARET H.	New York U	JUN 5 03 – JUN 8 03
WU, LI	U of Rhode Island	JUN 15 03 – JUN 27 03
YIN, GEORGE	Wayne State U	JUN 5 03 – JUN 7 03
YOU, YUNCHENG	U of South Florida	JUN 15 03 – JUN 29 03
YOUNG, LAI SANG	New York U	JUN 5 03 – JUN 7 03
ZEITOUNI, OFER	U of Minnesota	SEP 1 02 – JUN 30 03
ZHANG, MING	U of Texas-Houston	JUN 15 03 – JUN 27 03
ZHAO, JUN	IMA	SEP 3 02 – SEP 2 04

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