



BULLETIN

INTERNATIONAL CENTER FOR MATHEMATICS

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COMING EVENTS

June 23, 2007: 10th Annual Workshop on Applications and Generalizations of Complex Analysis

ORGANIZERS

J. Carvalho e Silva (Univ. of Coimbra), Ana Foulquié and Isabel Cação (Univ. of Aveiro).

AIMS

This workshop is intended to give an opportunity for discussions between junior and senior researchers from several European countries in various fields of mathe-

tics related to Complex, Quaternionic and Clifford Analysis (like Algebra, Geometry, Numerical Analysis, Differential Equations, etc.)

It is a satellite event of the 13th European Intensive Course on “Complex Analysis and its Generalizations”, that takes place in Coimbra and Aveiro.

For more information about the event, see

www.mat.uc.pt/~jaimecs/ac/10thw.htm

June 27-29, 2007: EPSA 2007 - Workshop and Advanced School on Eigenvalue Problems, Software and Applications

ORGANIZERS

Paulo B. Vasconcelos and Maria J. Rodrigues (Univ. of Porto), Osni Marques (Lawrence Berkeley National Lab., USA), José Roman (Technical Univ. of Valencia, Spain).

AIMS

The goal of the Workshop and Advanced School is to bring together leading researchers in the numerical solution of eigenvalue problems to survey the state-of-the-art methods and computational tools to solve large eigenvalue problems.

It aims to encourage the interchange of new ideas, to create a suitable environment for the participants to get acquainted and involved in today's computational mathematics, in particular research and applications that involve eigenproblems and spectral analysis.

Specific objectives are

- (i) to survey and present recent developments in both theoretical and computational aspects of matrix eigenvalue problems,
- (ii) to report on important practical applications and on challenging problems using high performance computing and
- (iii) to foster new collaborations between the participants.

This event comes as a follow up of successful events, such as the **Advanced Summer School on Recent Development on Large Scale Scientific Computing** (a CIM event organized in 2001) and six Workshops on ACTS - **Advanced CompuTational Software Collection** (organized by DOE/LBNL). It will include a range of tutorials on methods and tools for the solution of eigenvalue problems and hands-on practices using the high performing clusters from the new Grid Computing infrastructure available at the University of Porto.

The target attendees are researchers and post-graduate students on Mathematics, Biomathematics, Engineering, Computer Science, Computational Economics and Finance, and other branches of Social Sciences. The course in the Advanced School will interest also graduate students and computational scientists whose research require the use of robust numerical algorithms, novel techniques, large amounts of eigenvalue calculations, or combinations of these.

The event is a Satellite Conference of ICIAM 07 and will take place at the Faculty of Science of the University of Porto.

INVITED SPEAKERS

James Demmel (Univ. of California at Berkeley, USA)
Peter Arbenz (ETH, Zürich, Switzerland)
Filomena Dias d'Almeida (Univ. of Porto)
Tony Drummond (Lawrence Berkeley National Lab., USA)
Rui Ralha (Univ. of Minho)

OTHER SPEAKERS

Osni Marques (Lawrence Berkeley National Lab., USA)
José Roman (Technical Univ. of Valencia, Spain)
Paulo Vasconcelos (Univ. of Porto)

For more information about the event, see

www.fep.up.pt/epsa2007

July 18-20, 2007: LQCIL'07 Workshop on Quantum Cryptography

ORGANIZERS

Pedro Adão, Paulo Mateus (Chair), Cláudia Nunes and Yasser Omar (all Technical University of Lisbon).

AIMS

This workshop will inaugurate the biannual Lisbon Quantum Computation, Information and Logic Meetings Series. It will be devoted to quantum cryptography and security, bringing together researchers from both classical and quantum information security to exchange ideas and discuss the latest results and future directions of the field. The workshop will be constituted by 7 invited lectures and 15 contributed talks. It is organized within the scope of the **QuantLog project** of SQIG - Security and Quantum Information Group, IT (formerly CLC - Center for Logic and Computation).

The event will take place at the Instituto Superior Técnico, Lisbon.

INVITED SPEAKERS

Claude Crépeau (McGill Univ., Canada)
Artur Ekert (Cambridge Univ., U.K.)
Virgil Gligor (Univ. of Maryland, U.S.A.)
Hoi-Kwong Lo (Univ. of Toronto, Canada)
Mike Mosca (Univ. of Waterloo, Canada)

Andre Scedrov (Univ. of Pennsylvania, U.S.A.)

Umesh Vazirani (Univ. of California, Berkeley, U.S.A.)

For more information about the event, see

wslc.math.ist.utl.pt/lqcil07

July 22-27, 2007: CIM/UC Summer School “Topics in Nonlinear PDEs”

SCIENTIFIC COORDINATORS

José Francisco Rodrigues (CMUC and Univ. Lisbon),
José Miguel Urbano (CMUC and Univ. Coimbra).

AIMS

Nonlinear Partial Differential Equations (PDEs) are central in modern Applied Mathematics, both in view of the importance of the concrete problems they model and the novel techniques that their analysis generates. The subject has developed immensely in recent years, in many unexpected and challenging directions, and a new range of applications emerged with the advent of Biomathematics.

The Summer School is a joint venture of the CIM and the University of Coimbra (UC), and is sponsored by the Gulbenkian Foundation. It will gather a group of leading specialists working on Partial Differential Equations and its main applications to Biology, Engineering and Physics, and will highlight emerging trends and issues of this fascinating research topic.

The School will consist of four short courses of six hours each, and of short communications by PhD students and Post-Docs. It will be held at the University of Coimbra.

SHORT COURSES

Luis Caffarelli (Univ. of Texas at Austin, USA)
Problems and methods involving free boundaries

Charlie Elliott (Univ. of Sussex, UK)
Critical state models in superconductivity

Felix Otto (Univ. of Bonn, Germany)
Analysis of pattern formation in physical models

Benoit Perthame (École Normale Supérieure, France)
Nonlinear PDEs in Biology

For more information about the event, see

www.cim.pt/pdes07

September 17-19, 2007: ROBOMAT 2007 - Workshop on Robotics and Mathematics

ORGANIZERS (CHAIRPERSONS)

Hélder Araújo (University of Coimbra), Maria Isabel Ribeiro (Technical University of Lisbon).

AIMS

This workshop will aim at discussing several problems from Robotics from the perspective of the mathematical problems that they raise. It will be a forum where specialists with backgrounds both in Engineering and Mathematics will have an opportunity to discuss relevant research issues not from the point of view of the application but essentially from the point of view of the mathematical models and principles required to solve them.

This workshop will be relevant for:

PhD and MSc students working in Robotics and in relevant mathematical aspects;

Established researchers in Robotics and in Mathematics interested in strengthening the domains of their research work that are relevant for both Robotics and Mathematics;

The following mathematical disciplines are likely to have strong relevance for robotics: Algebraic and differential topology, Dynamic systems theory, Optimization algorithms, Combinatorics, Differential algebraic inequalities, Statistical learning theory.

The workshop will be held at Hotel D. Luís, Santa Clara, Coimbra.

INVITED SPEAKERS

Henrik Christensen
(Director of the Centre for Autonomous Systems at the Royal Institute of Technology, Stockholm, Sweden, and a chaired professor of computer science specialising in autonomous systems, in the Department of Computer Science and Numerical Analysis.)

David Mumford
(Professor at the Division of Applied Mathematics of the Brown University, USA; in 1974 he was awarded the Fields Medal at the International Congress of Mathematics; his main topic of current research is Pattern Theory.)

Raja Chatila
(*Directeur de Recherche CNRS*, he is the Head of the Robotics and Artificial Intelligence Group, of the LAAS, Toulouse, France; he has numerous contributions in Mobile Robotics, Intervention Robots and Planetary Rovers, Service Robots, Personal Robots,

Cognitive Robots; he has an extensive number of publications in all these fields and he has been responsible for several important European projects.)

For more information about the event, see

<http://labvis.isr.uc.pt/robomat>

October 26-27, 2007: Follow-up Workshop on Optimization in Finance

ORGANIZERS

A. M. Monteiro (Fac. of Economics, Univ. of Coimbra), R. H. Tütüncü (Goldman Sachs, Asset Management, Quantitative Equity, New York, USA) and L. N. Vicente (Dep. of Mathematics, Univ. of Coimbra).

AIMS

The Workshop on Optimization in Finance was held in Coimbra, Portugal, in July 5-8, 2005 Coimbra, Portugal. The quality of the meeting was considered high and the participation surpassed the best expectations. The conference program is still available at the web site www.mat.uc.pt/tt2005/of/program.htm. The workshop was organized under the auspices of CIM, and was one of the events of the CIM Thematic Term on Optimization 2005.

As in the 2005 workshop, the targeted audience for the Follow-up Workshop on Optimization in Finance includes graduate students and faculty members working in applied mathematics, operations research, and economics, who have been or plan to be interested in optimization methods in finance. The event will also be attractive for those doing quantitative modelling in the financial market. The Follow-up Workshop topics include, among others, asset allocation, risk management, and derivative pricing.

The Follow-up Workshop will be held in Coimbra (Hotel Quinta das Lágrimas). It will consist of a limited number of invited lectures. Those interested in contributing can submit a title and an abstract for a poster session.

INVITED SPEAKERS

Alexandre d'Aspremont (Princeton Univ., USA)
Covariance Selection with Applications in Finance

Victor DeMiguel (London Business School, UK)
Portfolio Optimization and Estimation Error

Jacek Gondzio (Univ. of Edinburgh, UK)
Parallel Solution Techniques in Very Large Scale Financial Planning Problems

Peter Laurence (Univ. di Roma "La Sapienza", Italy)
Hedging Spread Options

Ioana Popescu (INSEAD, France)
Robust Mean-Covariance Solutions for Portfolio Optimization

Ekkehard Sachs (University of Trier, Germany)
Optimization Methods in Calibration and Hedging

Ralf Werner (Technische Universität München & Hypo Real Estate Holding, Germany)
Consistency of Robust Portfolio Estimators

December 13-15, 2007: CIM Iberian Workshop on Partial Differential Equations, Numerical Solutions and Applications

The Workshop will bring together leading specialists in different aspects of the analysis of Partial Differential Equations. The program will include invited talks, mainly by Spanish and Portuguese mathematicians, as well as a few contributed talks. There will be ample room for discussion and interaction between the participants.

OTHER CIM EVENTS IN 2007:

WORKING AFTERNOONS SPM/CIM

CIM, Coimbra

A joint initiative of the Portuguese Mathematical Society and CIM.

September 29, 2007: Calculus of Variations

Organizer: Luísa Mascarenhas (New Univ. of Lisbon)

November 24, 2007: Algebraic Topology

Organizer: Margarida Mendes Lopes (Tech. Univ. of Lisbon)

For more information, see

www.spm.pt/investigacao/spmcim/spmcim.phtml

CIM SHORT COURSES

Hotel Quinta das Lágrimas, Coimbra

October 13, 2007: *Mathematics and Games*

Lecturer: Jorge Nuno Silva (Univ. of Lisbon)

Abstract: We explore the relation between mathematics and boardgames. Some classical examples: early strategy games (Ur, Senet), pedagogical games from the Middle Ages (Rithmomachia, Metromachia, Goose), Combinatorial Games of Conway. Sim and the Pigeon-hole principle, Hex and Brouwer's Fixed Point Theorem, Dots & Boxes and Euler's Theorem, Hamilton's game and graphs.

Schedule:

- 9:30 - 11:00 : Session 1
- 11:00 - 11:30 : Coffee-Break
- 11:30 - 13:00 : Session 2

- 13:00 - 15:00 : Lunch
- 15:00 - 17:00 : Session 3

Registration:

www.cim.pt/?q=short_course_math_and_games_2007

MEETINGS SPE/CIM

Hotel Quinta das Lágrimas, Coimbra

A joint initiative of CIM and the Portuguese Society of Statistics (SPE) with the support of the National Institute for Statistics (INE).

November 17, 2007: *Methodological Issues in Official Statistics*

Coordinator: Pedro Corte-Real (INE).

CIM EVENTS FOR 2008

The CIM Scientific Council, in a meeting held in Coimbra on February 10, approved the CIM scientific programme for 2008.

The list of events is the following:

INTERNATIONAL CONFERENCE ON MATHEMATICS AND CONTINUUM MECHANICS

February 19-22, University of Porto

ORGANIZERS

António Joaquim Mendes Ferreira (Univ. of Porto), Isabel Maria Narra de Figueiredo (Univ. of Coimbra) and Juha Videman (IST, Lisbon).

AIMS

The event focuses on a selected range of interdisciplinary topics handled from both a mathematical and an engineering applications point of view. Despite the apparent heterogeneity of the topics, they are certain to prompt interesting dialogue among the conveners.

The target audience is, besides engineers, physicists and mathematicians, graduate and PhD students interested

in doing research on problems related to Mathematics, Solid and Fluid Mechanics and Geophysics.

The conference will feature six thematic mini-symposia:

Computational Methods for Advanced Composites

Contact Mechanics

Mathematics and the Atmospheric Sciences

Modelling of Industrial Processes

Numerical Analysis of Thin Structures

Ocean Dynamics.

Each symposium consists of one forty-five minute plenary session and two to four invited half-hour addresses. Some contributed papers will be selected for fifteen to twenty minute presentations and others to be on display in a poster session.

For more information about the event, see

paginas.fe.up.pt/~cim2008

CIM/CRM WORKSHOP ON FINANCIAL TIME-SERIES

June 12-14, CIM, Coimbra

GAP VI: JOINT CRM/CIM WORKSHOP ON
GEOMETRY AND PHYSICS – INTEGRABLE SYSTEMS

June 16-21, CRM, Barcelona (Spain)

WORKSHOP ON NONPARAMETRIC INFERENCE
WNI2008

June 26-28, University of Coimbra

WORKSHOP ON ESTIMATING ANIMAL ABUNDANCE

July 7-9, University of Évora

CIM/UC SUMMER SCHOOL ON DYNAMICAL
SYSTEMS

July 21-26, University of Coimbra

INTERNATIONAL MEETING ON CALCULUS OF
VARIATIONS AND APPLICATIONS

September, New University of Lisbon

For updated information on these events, see

www.cim.pt/?q=events

CIM NEWS

MEETING OF THE GENERAL ASSEMBLY OF CIM

The General Assembly of CIM met on May 26, 2007, during the morning, in the CIM premises at the Astronomical Observatory of the University of Coimbra. In the afternoon of the same day, the members of the General Assembly had the opportunity to attend a talk by Gabriela Gomes (Gulbenkian Institute of Science), titled “*The SIRI Model in Epidemiology: Pertussis and Malaria*”.

During the Assembly two new associates were welcomed: the Group of Mathematical Physics of the Uni-

versity of Lisbon (gfm.cii.fc.ul.pt) and the Centre of Mathematical Sciences of the University of Madeira (www.uma.pt/Investigacao/Ccm).

The next Meeting of the General Assembly of CIM will be held in Coimbra on April 5, 2008.

ANNUAL MEETING OF THE ERCOM

March 7-8, 2008, Coimbra

The forthcoming ERCOM meeting will take place at the Centro Internacional de Matemática, Coimbra, Portugal, on March 7 and 8, 2008.

RESEARCH IN PAIRS AT CIM

The programme is suspended until January 2008.

CIM ON THE WEB

For updated information about CIM and its activities, see

www.cim.pt
