

# ESMTB Infoletter

## October 2009



[www.esmtb.org](http://www.esmtb.org)

Dear colleague

with this ESMTB Infoletter you receive information about conferences, workshops, schools and open positions. Please send relevant information to be included in the next ESMTB infoletter to [info@esmtb.org](mailto:info@esmtb.org).

Best regards, Andreas Deutsch  
Dresden, 22nd of October 2009

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## News

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### Reinhart Heinrich Doctoral Thesis Award 2009

Reinhart Heinrich Doctoral Thesis Award - The deadline for nominations is 31st October 2009. For details see link below.

<http://www.esmtb.org/downloads/RHDTaward.pdf>

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## Conferences

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### Third International Conference on Simulation Tools and Techniques at Torremolinos (Malaga), Spain

**Date: 2010-03-15 to 2010-03-19**

SIMUTools 2010 (the 3rd International Conference on Simulation Tools and Techniques) invites the submission of original, high-quality papers on simulation tools, methodologies, applications, and practices. This new edition of the conference builds upon the great success of our two previous meetings. While SIMUTools' main focus is on advances in simulation tools, we encourage the submission of papers on all aspects of simulation modeling and analysis, including broader theoretical and practical research contributions. The conference serves as a forum to foster collaborative work by bringing together researchers from academia and industry, and practitioners who develop and who use simulation technologies in a variety of areas.

**IMPORTANT:** Submitting authors must upload an abstract by the posted deadline in advance of the full paper.

Abstract submission deadline: October 26, 2009 (was October 12), final  
Submission deadline: November 2, 2009 (was October 26), final  
Industry Track Papers Due: November 15, 2009  
Poster submission deadline: December 10, 2009  
Notification of acceptance: January 12, 2010  
Camera-ready deadline : February 1, 2010

One Best Paper and one Best Student Paper will be selected by peer reviews and will be announced during the social event at the conference. Only papers with a student as a first author are eligible for the Best Student Paper Award.

<http://www.simutools.org>

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### IB2010 - Integrative Bioinformatics Symposium at Cambridge University, United Kingdom

**Date: 2010-03-22 to 2010-03-24**

Biological data are scattered across thousands of biological databases and hundreds of scientific journals. Current high throughput genomics technologies generate large quantities of high dimensional data. Microarray, NMR, mass spectrometry, protein chips, gel electrophoresis data, Yeast-Two-Hybrid, QTL mapping, gene silencing, and knockout experiments are all examples of technologies that capture thousands of data points, often in single experiments. The challenge for Integrative Bioinformatics is to capture, model, integrate, and analyse these data in a consistent way to provide new and deeper insights into complex biological systems.

This sixth meeting on Integrative Bioinformatics will be of interest to Bioinformaticians, Computer Scientists and others working in, or interested in finding out more about, the developing area of integrative bioinformatics. There will be opportunities to present and discuss methods, theoretical approaches, and their practical applications.

IB2010 is organized by Rothamsted Research, The University of Cambridge and the Leibniz Institute of Plant Genetics and Crop Plant Research (IPK) Gatersleben.

#### Topics of interest

- Database integration
- Combined dry and wetlab studies
- Molecular databases / Data warehouses
- Errors and inconsistencies in biological databases
- Prediction and integration of metabolic and regulatory networks
- Genotype-phenotype linkage
- Protein-protein interactions
- Integrative microarray modeling and analyses
- Integrative approaches for drug design
- Computational infrastructure for biotechnology
- Virtual cell
- Tool integration and workflow systems
- Laboratory information management systems
- Computational systems biology
- Quality and consistency of biological ontologies
- Integrative modelling and simulation frameworks
- Integrative data and text mining approaches
- Network analysis
- Data visualisation and visual analytics

#### Important dates

- 1st December 2009 Paper submission deadline (up to 12 pages)
- 15th January 2010 Notification of acceptance for papers
- 10th February 2010 Camera ready paper submission deadline
- 10th February 2010 Poster and software demo submission deadline
- 15th February 2010 Notification of acceptance for poster and software demos
- 21st February 2010 Last date for early registration

<http://www.rothamsted.bbsrc.ac.uk/bab/conf/ib2010/>

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## Open Positions

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### Postdoc position in mathematical ecology at University of Helsinki, Finland

**Deadline for applications: 2009-10-31**

The Biomathematics Group of the Department of Mathematics, University of Helsinki, Finland, is looking for a highly motivated candidate with background in mathematical modelling and prior work in mathematical ecology/evolution to join our group as a postdoc. PhD in mathematics or PhD in a related field with strong and demonstrated mathematical background is required. Applicants with their own research programme proposal are at an advantage.

The position is available within the Finnish Centre of Excellence in Analysis and Dynamics Research for 1 year with the possibility of a 2-year extension, supervised by Prof. Mats Gyllenberg and one of the senior group members Stefan Geritz, Eva Kisdi, Yi Wang and Ping Yan. Salary and social benefits according to the standard Finnish University Salary System, starting salary 2838 - 3148 euros. The starting date is negotiable.

Our research areas include structured population dynamics, adaptive dynamics, dynamical systems, and applications thereof. We offer an international research environment and wide-ranging possibilities to cooperate with experts in mathematical physics, geometric measure theory, operator theory, stochastic differential equations etc. in the Centre of Excellence in Analysis and Dynamics. For more information, see <http://mathstat.helsinki.fi/research/biomath/> (Biomathematics Group), <http://wiki.helsinki.fi/display/huippu/> (Centre of Excellence), and <http://mathstat.helsinki.fi/english/> (Department of Mathematics); with specific queries, contact Eva Kisdi at [eva.kisdi@helsinki.fi](mailto:eva.kisdi@helsinki.fi).

Applications including a CV, list of publications, a letter of motivation or research proposal, and two reference addresses are to be sent to [eva.kisdi@helsinki.fi](mailto:eva.kisdi@helsinki.fi) with a cc to [mats.gyllenberg@helsinki.fi](mailto:mats.gyllenberg@helsinki.fi). Please write "Application for postdoc position in biomathematics" in the subject line. Evaluation will start immediately

and continue until the position is filled.

Please contact: *Eva Kisdi*

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**Two Postdoctoral Associate positions in Mathematical Epidemiology at University of Miami, Florida, USA**

**Deadline for applications: 2009-10-31**

The Department of Mathematics at the University of Miami is seeking applicants for two Postdoctoral Associate positions in Mathematical Epidemiology, starting date flexible Fall 2009/Spring 2010. The goal of this interdisciplinary project, funded by the National Institute of General Medical Sciences/NIH, is to integrate individual-patient data with mathematical modeling to provide population-level analysis of the spread of antimicrobial-resistant bacteria (ARB) in hospital settings. The first position will focus on development of mathematical models applied to characterize the superspreaders of antimicrobial-resistant bacteria, the subgroup of patients responsible for the majority of ARB spread. It will also involve developing theory relating to the transmission dynamics and persistence of antimicrobial-resistant bacteria (ARB) in hospital settings. The second position will involve analyzing individual-level patient data obtained from an extensive integrated online medical record system of over one million hospitalized patients using statistical and computational methods. Work will be carried out under the supervision of Dr. Shigui Ruan (<http://www.math.miami.edu/~ruan>).

Applicants should hold a PhD in Applied Mathematics or a related field with strong modeling, analytic, computational, or statistical skills. Previous experience in the modeling and analysis of ecological/epidemiological systems, or previous collaborations with experimentalists (biologists, ecologists or epidemiologists) will be preferred. Salary is in the range of \$36,996-40,000 per year (depending on experience) plus fringe benefits. For further information about these projects, please contact Dr. Shigui Ruan ([ruan@math.miami.edu](mailto:ruan@math.miami.edu)). Applicants must apply online. In addition, send a detailed CV, together with a cover letter stating your research interests and three reference letters to Dr. Shigui Ruan, Department of Mathematics, University of Miami, Coral Gables, FL 33124-4250,

USA. Electronic applications are encouraged. Review of applications will start immediately and will continue until the positions have been filled. The University of Miami is an Affirmative Action/Equal Opportunity Employer.

Please contact: *Dr. Shigui Ruan*  
<http://www.math.miami.edu/~ruan>

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**3 year postdoctoral research position in stochastic modelling of reaction-diffusion processes at University of Oxford, UK**

**Deadline for applications: 2009-11-27**

We invite applications for a three-year postdoctoral research position, funded by the European Research Council Starting Grant awarded to Dr Radek Erban. The successful candidate will work with Dr Erban at the Oxford Centre for Collaborative Applied Mathematics (OCCAM) which is part of the Mathematical Institute, University of Oxford. The salary will be on Oxfords Grade 7 salary scale for academic-related staff (starting salary £28,839-£30,594). This position is available from 1st January 2010 or as soon as possible thereafter.

Project summary: There are two fundamental approaches to the mathematical modelling of chemical reactions and diffusion: deterministic models which are based on partial differential equations (PDEs), and stochastic simulation algorithms (SSAs). Stochastic models provide a more detailed understanding of reaction-diffusion processes, and are often necessary for the modelling of biological systems where the small numbers of molecules of some chemical species make deterministic models inaccurate or even inapplicable. Several reaction-diffusion models have been proposed in the literature but they each have their limitations. The first objective of the project is to investigate under which conditions different stochastic reaction-diffusion models are equivalent and under which conditions they differ. The second major objective is to design a reliable, correct and efficient method for the stochastic simulation of reaction-diffusion processes in biology. To achieve this goal, we will investigate how combining stochastic reaction-diffusion models with different levels of detail (or even combining SSAs with deterministic PDEs) can be done accurately and efficiently.

Besides addressing open questions about existing reaction-diffusion SSAs, we will also investigate and implement a new class of SSAs which were introduced in the recent work of the research group.

Further particulars (including the selection criteria) may be obtained from the Administrative Assistant at the Mathematical Institute, 24-29 St Giles', Oxford, OX1 3LB, United Kingdom; email: [vacancies@maths.ox.ac.uk](mailto:vacancies@maths.ox.ac.uk) and from the link <http://www.maths.ox.ac.uk/node/10740>. Applications should include a Curriculum Vitae, a covering letter explaining your suitability for the position and how you meet the selection criteria, and the names and addresses of two referees. Applications must arrive by noon on Friday 27th November 2009. They should be sent to the Administrative Assistant (Vacancies), Mathematical Institute, 24-29 St Giles', Oxford, OX1 3LB. E-mail applications ([vacancies@maths.ox.ac.uk](mailto:vacancies@maths.ox.ac.uk)) are acceptable. Ensure that you clearly quote the reference BK/09/031. Candidates should ask their referees to send their references directly to the Administrative Assistant, Mathematical Institute so that they arrive before the closing date. It is the responsibility of candidates to ensure that their references arrive by the closing date. Interviews for this position will be held on Thursday 10th December 2009 (telephone interviews are possible).

Please contact: [vacancies@maths.ox.ac.uk](mailto:vacancies@maths.ox.ac.uk)  
<http://www.maths.ox.ac.uk/node/10740>

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### 3 year postdoctoral research position in Chemical Fokker-Planck equation and multiscale modelling of (bio)chemical systems at University of Oxford, UK

**Deadline for applications: 2009-11-27**

We invite applications for a three-year postdoctoral research position, funded by the European Research Council Starting Grant awarded to Dr Radek Erban. The successful candidate will work with Dr Erban at the Oxford Centre for Collaborative Applied Mathematics (OCCAM) which is part of the Mathematical Institute, University of Oxford. The salary will be on Oxfords Grade 7 salary scale for academic-related staff (starting salary £28,839-£30,594). This position is available from 1st January 2010 or as soon as possible thereafter.

Project summary: Well-stirred chemical systems are traditionally simulated using deterministic (mean-field) models which are written in terms of ordinary differential equations (ODEs) describing the time evolution of concentrations of chemical species involved. A more detailed description of chemically reacting systems is given by the Gillespie stochastic simulation algorithm (SSA). The behaviour of the Gillespie SSA can be approximated by the chemical Fokker-Planck equation (CFPE), a partial differential equation (PDE) which gives a more detailed description than the mean-field ODEs (including a description of the noise). We will use the N-dimensional CFPE to investigate the differences between stochastic and deterministic models of systems of N chemical species (either by solving the CFPE numerically, or by asymptotic methods). The potential of numerical methods for solving high-dimensional PDEs (which are the subject of current research in numerical mathematics) will be explored for larger values of N. We will also investigate a multiscale method based on the n-dimensional effective Fokker-Planck equation (where  $n \ll N$  can be detected by newly developed anisotropic diffusion maps). Its coefficients will be estimated by short bursts of appropriately initialized stochastic simulations. We will also investigate the conditions under which the multiscale approaches are accurate and efficient.

Further particulars (including the selection criteria) may be obtained from the Administrative Assistant at the Mathematical Institute, 24-29 St Giles', Oxford, OX1 3LB, United Kingdom; email: [vacancies@maths.ox.ac.uk](mailto:vacancies@maths.ox.ac.uk) and from the link <http://www.maths.ox.ac.uk/node/10741>. Applications should include a Curriculum Vitae, a covering letter explaining your suitability for the position and how you meet the selection criteria, and the names and addresses of two referees. Applications must arrive by noon on Friday 27th November 2009. They should be sent to the Administrative Assistant (Vacancies), Mathematical Institute, 24-29 St Giles', Oxford, OX1 3LB. E-mail applications ([vacancies@maths.ox.ac.uk](mailto:vacancies@maths.ox.ac.uk)) are acceptable. Ensure that you clearly quote the reference BK/09/032. Candidates should ask their referees to send their references directly to the Administrative Assistant, Mathematical Institute so that they arrive before the closing date. It is the responsibility of candidates to ensure that their references arrive by the closing date. Interviews

for this position will be held on Tuesday 15th December 2009 (telephone interviews are possible).

Please contact: [vacancies@maths.ox.ac.uk](mailto:vacancies@maths.ox.ac.uk)  
<http://www.maths.ox.ac.uk/node/10741>

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**CTBP/UCSD Postdoctoral Fellowships in Biological Physics at Center for Theoretical Biological Physics (CTBP), University of California, San Diego, USA**

**Deadline for applications: 2009-11-30**

The Center for Theoretical Biological Physics (CTBP) at the University of California, San Diego, is currently soliciting applications for Postdoctoral Fellowships in Biological Physics. CTBP is a consortium of researchers from UCSD, the Salk Institute for Biological Studies and the University of Michigan, involved in research on fundamental problems at the interface between physics and biology. Current synergy research areas include, Cellular Tectonics, the dynamic mesoscale structure of the intracellular milieu; Computational Approaches to Intracellular and Intercellular Communication, chemical-based reaction-diffusion governed communication across complex spaces; and Gene Regulatory Networks, genetic/signaling networks exhibit specificity and robustness in the face of intrinsic stochasticity, and yet retain evolvability. Applicants are asked to submit a curriculum vitae, statement of research interests and research accomplishments, and at least three letters of support. In addition to our current fellowships program, this year, CTBP introduces the Zimm fellowship, especially designed for accomplished researchers who would like pursue more a independent line of research.

Additional information and applications are accepted online or contact Christopher M. Smith, PhD, CTBP/UCSD, 9500 Gilman Drive, MC0374, San Diego, CA 92093-0374, 858-534-8370, [ctbp@ucsd.edu](mailto:ctbp@ucsd.edu). Applications will be reviewed the second week in November and May. Fellowship start dates are flexible.

UCSD is an Equal Opportunity/ Affirmative Action employer with a strong commitment to excel-

lence through diversity.

Please contact:  
<http://ctbp.ucsd.edu/PDFellowships.html>

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**Postdoc positions at MPI for Mathematics in the Sciences, Leipzig, Germany**

**Deadline for applications: 2009-12-31**

Our research explores new interactions between mathematics and the sciences, in particular in the areas of complexity and cognition, efficient algorithms, mathematical biology, mathematical and theoretical physics, scientific computation, based on a strong background in analysis or geometry or in other formal disciplines.

We provide a scientific environment where you are encouraged to explore new scientific directions and where you will find many partners with whom you can discuss a wide range of scientific ideas.

We usually offer positions for one year and, in exceptional cases, for two years.

Applicants should send a CV, list of publications, three letters of recommendation and a research project with names of possible collaborators at MPI MIS to:

Prof. Dr. Wolfgang Hackbusch  
Managing Director  
MPI for Mathematics in the Sciences  
Inselstr. 22  
D-04103 Leipzig  
Germany

Applications after the deadline may be considered until the positions are filled. The institute encourages applications from women and minorities.

Deadline for applications: December 31, 2009  
Starting date: October 1, 2010

Please contact:  
<http://www.mis.mpg.de/>