

Call for Papers FMMB 2014

First International Conference on Formal Methods in Macro-Biology

September 22-24, 2014, Noumea, New Caledonia

<http://fmmb2014.sciencesconf.org/>

Program co-Chairs

François Fages, Inria Paris-Rocquencourt, France
Carla Piazza, University of Udine, Italy

Keynote speakers

Pieter Collins, Maastricht Univ., Netherlands
Saso Dzeroski, Jožef Stefan Institute, Slovenia
Radu Grosu, Vienna Tech. Univ., Austria
Steffen Klamt, MPI Magdeburg, Germany,
Pietro Lio, Cambridge Univ., UK
Hélène Morlon, ENS Paris, France

Important Dates

April 25, *Paper Submission*
June 4, *Notification*
June 25, *Camera-ready submission*

Program Committee

Pierre Auger, Académie des Sciences, IRD, France
Pieter Collins, Maastricht University, Netherlands
Thao Dang, CNRS Verimag, France
Finn Drablos, NTNU, Trondheim, Norway
Saso Dzeroski, Jozef Stefan Institute, Slovenia
Ofer Feinerman, Weizmann Institute, Israel
Ricard Gavaldà, UPC, Barcelona, Spain
Radu Grosu, Vienna University of Technology, Austria
Katsumi Inoue, Kyoto University, Japan
Steffen Klamt, MPI, Magdeburg, Germany
Nicolas Le Novère, Babraham Institute, UK
Pietro Lio', University of Cambridge, UK
Pablo Marquet, Pontificia Univ. Católica de Chile, Chile
Annabelle McIver, Macquarie University, Australia
Istvan Miklos, Rényi Institute, Budapest, Hungary
Bud Mishra, New York University, USA
Satoru Miyano, University of Tokyo, Japan
Hélène Morlon, Ecole Polytechnique, France
Ion Petre, Abo Akademi Univ., Turku, Finland
Jean-Christophe Poggiale, CNRS Marseille, France
David Safranek, Masaryk University, Czech Republic
Daniel Stouffer, University of Canterbury, New Zealand
Gouhei Tanaka, University of Tokyo, Japan
PS Thiagarajan, NUS, Singapore
Denis Thieffry, ENS Paris, France
Jerzy Tiuryn, University of Warsaw, Poland
Adelinde Uhrmacher, University of Rostock, Germany

Organisation

Teodor Knapik, University of New Caledonia,
Morgan Mangeas, IRD Montpellier,
Didier Cauca, CNRS and Université Paris-Est.

Over the past decade, formal methods from computer science have been successfully applied in life sciences to decipher biological processes mostly at the molecular and cellular levels. Extending these methods to higher levels in systems biology, such as tissues, organs, but also populations and ecosystems is a challenging issue. In order to analyze such complex systems, temporal and spatial models able to represent a large number of components acting at different scales are required. Beyond ordinary and partial differential equation systems, powerful modeling languages, approximation techniques and efficient algorithms need be designed to tackle challenging macro biology questions.

The purpose of FMMB is to bring together researchers, developers, and students in theoretical computer science, applied mathematics, mathematical and computational biology, interested in studying the application of formal methods to the construction and analysis of models describing biological processes at both micro and macro levels. The topics of interest include (but are not limited to):

- representation and analysis of biological systems in formal systems such as
 - ordinary and partial differential equation systems,
 - discrete event systems, infinite state systems,
 - hybrid discrete-continuous systems, hybrid automata,
 - cellular automata, multi-agent systems,
 - stochastic processes, stochastic games,
 - statistical physics models,
 - process algebras, process calculi,
 - rewriting systems, graph grammars,
- coupling models and data, inference of models from data,
- computability and complexity issues,
- modeling and analysis tools, case studies.

Application areas particularly solicited include:

- environmental biology, ecology, marine science,
- agriculture and forestry,
- developmental biology, population biology,
- epidemiology, medicine,
- systems biology, synthetic biology.

Submission and Publication

The authors are invited to submit regular research papers consisting of original material, from 12 to 20 pages long in LNCS Springer-Verlag style, and short papers of 2 pages (for poster and short oral presentations), as PDF files, through <http://www.easychair.org/conferences/conf=FMMB2014>.

Every accepted paper should be presented at the conference by one of its authors. All papers accepted as either regular or short papers will be published in a book in Springer-Verlag LNBI series. After the conference, a selection of papers will be invited to submit an extended version for a journal special issue.

New Caledonia

FMMB will be held in New Caledonia, a special collectivity of France located in the southwest Pacific Ocean, and a biodiversity hotspot known for high terrestrial endemism and surrounded by second world longest coral reef system. The lagoons of New Caledonia are listed as UNESCO World Heritage site. Noumea is 3 hours by plane from Australia, where ICSB 2014 (<http://www.icsb14.com/>) will be held on Sep. 14-18 2014 right before FMMB.