

# Twelfth International Conference on Monte Carlo Methods and Applications (MCM 2019)

Sydney, July 8–12, 2019

## Background

The biennial *International Conference on Monte Carlo Methods and Application* (MCM) (formerly *IMACS Seminar on Monte Carlo Methods*) is one of the most prominent conference series devoted to research on the mathematical aspects of stochastic simulation and Monte Carlo methods, including their effective application in different areas, such as finance, statistics, machine learning, computer graphics, computational physics, biology, chemistry, and scientific computing in general.

The conference is held on odd years and alternates with the International Conference on Monte Carlo and Quasi-Monte Carlo Methods in Scientific Computing (MCQMC) which is held on even years. These two conference series cover similar topics and their sets of participants have a significant intersection. It is expected that many participants to the highly successful MCQMC 2012 held in Sydney (<http://www.mcqmc2012.unsw.edu.au/>) will return for MCM 2019.

The MCM 2019 conference will be held back-to-back with the *The 20-th INFORMS Applied Probability Society Conference* to be held in the neighboring city of Brisbane from July 2-nd to the 4-th, see <http://informs-aps.smp.uq.edu.au/>.

## Previous editions

11th International Conference on Monte Carlo Methods and Applications (MCM 2017), July 3-7, Université de Montréal, Canada, 2017. <http://www.crm.umontreal.ca/2017/MCM2017/>

10th IMACS Seminar on Monte Carlo Methods, Johannes Kepler University and Radon Institute for Computational and Applied Mathematics, Linz, July 6–10, 2015. <http://www.mcm2015.jku.at>

9th IMACS Seminar on Monte Carlo Methods, Université de Savoie, Annecy-le-Vieux, France, July 15–19, 2013, <http://www.lama.univ-savoie.fr/IMACS2013/>

8th IMACS Seminar on Monte Carlo Methods, Bulgarian Academy of Science, Borovets, Bulgaria, August 29 – September 2, 2011, [http://parallel.bas.bg/dpa/IMACS\\_MCM\\_2011/](http://parallel.bas.bg/dpa/IMACS_MCM_2011/)

- 7th IMACS Seminar on Monte Carlo Methods, Université Libre de Bruxelles, Brussels, Belgium, September, 6–11, 2009
- 6th IMACS Seminar on Monte Carlo Methods, University of Reading, UK, June 18–21, 2007
- 5th IMACS Seminar on Monte Carlo Methods, Florida State University, Tallahassee, USA, May 16–20, 2005
- 4th IMACS Seminar on Monte Carlo Methods, Konrad-Zuse-Zentrum for Scientific Computing, Berlin, Germany, September 15–19, 2003
- 3rd IMACS Seminar on Monte Carlo Methods, University of Salzburg, Austria, September 10–14, 2001
- 2nd IMACS Seminar on Monte Carlo Methods, International Conference Hall “Joliot Curie”, Varna, Bulgaria, June 7–11, 1999
- 1st IMACS Seminar on Monte Carlo Methods, Université Libre de Bruxelles, Brussels, Belgium, April 1–4, 1997

## Steering committee

The *steering committee* for the conference series is currently composed of:

- R. Cools, Katholieke Universiteit Leuven, Belgium  
I. Dimov, Bulgarian Academy of Science, Bulgaria  
T. Müller-Gronbach, Universität Passau, Germany  
C. Lécot, Université de Savoie, France  
P. L’Ecuyer, Université de Montréal, Canada (chair of committee)  
K. K. Sabelfeld, Russian Academy of Science, Russia  
W. Ch. Schmid, Universität Salzburg, Austria  
P. Whitlock, City University of New York, USA

## Past plenary speakers

Each edition typically has 6 to 9 plenary speakers. The plenary speakers in the last three editions were:

### Montréal, 2017:

- Steffen Dereich, WWU Münster, Germany  
Paul Dupuis, Brown University, Providence, USA  
Mark Girolami, University of Warwick, UK  
Emmanuel Gobet, Ecole Polytechnique, Palaiseau, France  
Aicke Hinrichs, Johannes Kepler University, Linz, Austria

Alexander Keller, Nvidia Research, Germany  
Gunther Leobacher, University of Graz, Austria  
Art B. Owen, Stanford University, USA  
Christian P. Robert, Université Paris-Dauphine, France

#### Linz, 2015:

Josef Dick, UNSW Sydney  
Stefan Geiss, University of Jyväskylä  
Markus Kraft, University of Cambridge  
Annika Lang, Chalmers University of Technology  
Tony Lelièvre, ENPC Paris  
Wilfried Meidl, RICAM Linz  
Erich Novak, FSU Jena  
Klaus Ritter, TU Kaiserslautern  
Robert Scheichl, University of Bath

#### Annecy, 2013:

Pierre Del Moral, Inria Bordeaux, France  
Ivan Dimov, Bulgarian Academy of Science, Bulgaria  
Mike Giles, University of Oxford, United Kingdom  
Pierre L'Ecuyer, Université de Montréal, Canada  
Harald Niederreiter, Austrian Academy of Science, Austria  
Christian Robert, Université Paris-Dauphine, France

## Journal special issue

Traditionally, a special issue of the journal *Mathematics and Computers in Simulation* is devoted to a selection (20–25%) of articles based on presentations at the conference.

## Conference Topics

The topics covered by the conference include the following (the list is not exhaustive):

Monte Carlo methods and principles;  
pseudorandom number generators;  
low-discrepancy point sets and sequences in various spaces;  
quasi-Monte Carlo and randomized quasi-Monte Carlo methods;  
simulation of random variates and random processes;  
variance reduction and efficiency improvement methods for simulation;  
rare-event simulation methods;

multilevel Monte Carlo methods;  
stochastic optimization methods based on simulation and random search;  
simulation algorithms for highly-parallel computing environments;  
tractability and complexity analysis of multivariate problems (integration, approximation, etc.);  
Monte Carlo and quasi-Monte Carlo methods for stochastic differential equations and partial differential equations;  
Markov chain Monte Carlo;  
particle filters, splitting, and other adaptive learning methods;  
applications in physics, chemistry, biology, economy, finance, statistics, management, medical science, computer graphics, etc.

## Conference Format

The conference will be held at the University of New South Wales in Sydney.

We plan to have 8 or 9 invited plenary speakers, who will give one-hour talks, with discussion. All other talks will last 30 minutes including questions and discussion. They will be split into sessions of 3 or 4 talks, scheduled in two or three tracks of parallel sessions at a time. Some of these sessions will be special sessions devoted to a particular topic, comprised of invited speakers, and organized by designated chairpersons.

To promote true exchanges of ideas, we will ask that all speakers in any given special session have different affiliations. The other sessions will contain contributed talks accepted on the basis of submitted abstracts. The conference will start Monday morning and end early on Friday afternoon.

organizing committee:  
Zdravko Botev (chair)  
Joseph Dick  
Frances Kuo  
Ian Sloan  
Quoc Thong Le Gia  
Libo Li  
Peter Straka