This is the schedule coming with the "Book of Abstracts" for the 10th IMACS Seminar on Monte Carlo Methods. Page numbers in the schedule refer to pages in the Book of Abstracts.

## Monday, July 6, 2015 – Morning

| Time | Lecture Hall A, S3 Z17 **Special Session** (Pseudo-) random number generation p.68 Organizers: *Alev Topuzoğlu and Arne Winterhof* | Lecture Hall B, S3 Z18 **Special Session** Information-based complexity, Part 1 of 2 p.51 Organizers: *Aicke Hinrichs and Erich Novak* | Lecture Hall C, S2 053 **Technical Session** Chair: *Stefan Thonhauser* | Lecture Hall D, S2 059 **Technical Session** Chair: *Pedro Vilanova* |
|---|---|---|---|---|
| 08:00 – 10:30 | Registration – Science Park 3 | | | |
| 08:15 – 08:30 | Opening ceremony – Lecture Hall A, S3 Z17 | | | |
| 09:00 – 10:00 | Lecture Hall A, S3 Z17 **Plenary Lecture** *Klaus Ritter* **Embeddings for high- and infinite-dimensional integration problems** p.10 Chair: *Gunther Leobacher* | | | |
| 10:00 – 10:30 | Coffee break – Science Park 3 | | | |
| 10:30 – 11:00 | *Harald Niederreiter* Sequences and multisequences with high nonlinear complexities p.68 | *Jan Vybíral* Approximation of sums of ridge functions p.51 | *Francisco Bernal* Accelerated Monte Carlo schemes for bounded SDEs p.20 | *Ivan Dimov* A new unbiased stochastic algorithm for solving linear Fredholm equations p.23 |
| 11:00 – 11:30 | *László Mérai* On the typical and minimal values of the cross-correlation measure p.68 | *Peter Kritzer* Open-type QMC rules for weighted Sobolev spaces p.51 | *Christoph Reisinger* Estimation of option values under the Heston stochastic-local volatility model with CIR interest rates p.38 | *Venelin Todorov* Balancing of systematic and stochastic errors in Monte Carlo algorithms for integral equations p.45 |
| 11:30 – 12:00 | *Domingo Gomez-Perez* Digital explicit inversive pseudorandom numbers: improved results and derived constructions p.69 | *Paweł Morkisz* Optimality of Taylor algorithm for solving systems of IVPs with presence of deterministic noise p.52 | *Lee Ricketson* Multilevel Monte Carlo for a class of McKean-Vlasov equations p.39 | *Massimiliano Tamborrino* First passage times of bivariate correlated diffusion processes: analytical and numerical methods p.42 |
| 12:00 – 12:30 | | *Shun Zhang* Complexity of oscillatory integrals on the real line p.52 | *Michaela Szölgyenyi* Solving SDEs with discontinuous drift p.42 | *Zdravko Botev* Sequential importance sampling for high-dimensional integration p.20 |
| 12:30 – 14:00 | Lunch break | | | |

**Monday, July 6, 2015 – Afternoon I**

| | | | | |
|---|---|---|---|---|
| 14:00 – 15:00 | **Lecture Hall A, S3 Z17** <br> **Plenary Lecture** <br> ***Wilfried Meidl*** <br> **Bent functions and normality**   p.10 <br> Chair: *Domingo Gomez-Perez* | | | |
| 15:00 – 15:30 | Coffee break – Science Park 3 | | | |
| | Lecture Hall A, S3 Z17 <br> **Special Session** <br> Numerical methods for stochastic differential equations   p.65 <br> Organizers: *Kristian Debrabant and Andreas Rößler* | Lecture Hall B, S3 Z18 <br> **Special Session** <br> Stochastic models and algorithms for the nonlinear Smoluchowski equation   p.85 <br> Organizer: *Karl Sabelfeld* | Lecture Hall C, S2 053 <br> **Special Session** <br> Multilevel Monte Carlo   p.60 <br> Organizers: *Mike Giles and Michael Gnewuch* | Lecture Hall D, S2 059 <br> **Technical Session** <br> Chair: *Roswitha Hofer* |
| 15:30 – 16:00 | *Evelyn Buckwar* <br> Stability issues for SDEs <br> p.65 | *Markus Kraft* <br> Stochastic weighted particle methods for systems with coagulation, fragmentation and spatial inhomogeneity <br> p.85 | *Mike Giles* <br> MLMC for parabolic PDEs <br> p.60 | *Friedrich Pillichshammer* <br> Utilizing fast decreasing weights for the construction of efficient lattice rules   p.37 |
| 16:00 – 16:30 | *Seyed Mohammad Hosseini* <br> Stability properties of semi-implicit weak order 2.0 Taylor schemes for SDEs and SDDEs   p.66 | *Robert Patterson* <br> Approximation errors for Smoluchowski simulations <br> p.86 | *Stefan Heinrich* <br> Complexity of almost linear first order PDEs   p.60 | *Helene Laimer* <br> A reduced fast component-by-component construction of lattice point sets with small weighted star discrepancy   p.31 |

## Monday, July 6, 2015 – Afternoon II

| | Lecture Hall A, S3 Z17 **Special Session** Numerical methods for stochastic differential equations p.65 Organizers: *Kristian Debrabant* and *Andreas Rößler* | Lecture Hall B, S3 Z18 **Special Session** Stochastic models and algorithms for the nonlinear Smoluchowski equation p.85 Organizer: *Karl Sabelfeld* | Lecture Hall C, S2 053 **Special Session** Multilevel Monte Carlo p.60 Organizers: *Mike Giles* and *Michael Gnewuch* | Lecture Hall D, S2 059 **Technical Session** Chair: *Roswitha Hofer* |
|---|---|---|---|---|
| 16:30 – 17:00 | *Przemysław Zielinski* A micro-macro method to accelerate Monte Carlo simulation of stochastic differential equations p.66 | *Karl Sabelfeld* Stochastic simulation of electron hole annihilation by tunneling and diffusion based on a system of Smoluchowski equations p.86 | *Frances Kuo* Multilevel quasi-Monte Carlo methods for lognormal diffusion problems p.61 | *Shinsuke Mori* A fast QMC computation by low-WAFOM point sets for cumulative distribution of multivariate normal distributions p.35 |
| 17:00 – 17:30 | *Annika Lang* SPDE simulation: How does "P" increase the complexity? p.67 | *Wolfgang Wagner* Stochastic weighted algorithms for population balance equations with multi-dimensional type space p.87 | *Gilles Pages* Multilevel Richardson-Romberg estimators: from regular to Langevin Monte Carlo simulation p.61 | |
| 17:30 – 18:00 | *Harald Oberhauser* Monte-Carlo via Skorokhod embeddings p.67 | | *Fabio Nobile* Multi-index Monte Carlo method p.62 | |
| 19:00 – 21:00 | Welcome reception – Old Town Hall | | | |

## Tuesday, July 7, 2015 – Morning

| Time | Lecture Hall A, S3 Z17 | Lecture Hall B, S3 Z18 | Lecture Hall C, S2 053 | Lecture Hall D, S2 059 |
|---|---|---|---|---|
| 09:00 – 10:00 | **Plenary Lecture** — *Markus Kraft* — **Detailed population balance modelling of soot formation and oxidation** p.11 — Chair: *Stefan Geiss* | | | |
| 10:00 – 10:30 | Coffee break – Science Park 3 | | | |
| | **Special Session** Quasi-Monte Carlo methods and applications, Part 1 of 2 p.70 Organizers: *Makoto Matsumoto and Dirk Nuyens* | **Special Session** Application in finance p.48 Organizer: *Emmanuel Gobet* | **Special Session** Stochastic computation and complexity of high-dimensional problems, Part 1 of 4 p.77 Organizers: *Stefan Heinrich and Thomas Müller-Gronbach* | **Technical Session** Chair: *Ronald Cools* |
| 10:30 – 11:00 | *Pierre L'Ecuyer* Recent developments on Array-RQMC p.70 | *Denis Belomestny* On a weak multilevel Monte Carlo scheme for multidimensional Levy processes p.48 | *Steffen Dereich* A complexity theorem for multilevel stochastic approximation algorithms p.77 | *Markus Ableidinger* Splitting integrators for finite spin-ensembles p.18 |
| 11:00 – 11:30 | *Alexander Gilbert* Implementation of the multivariate decomposition method using quasi-Monte Carlo cubature rules p.71 | *Gilles Pages* Multilevel Richardson-Romberg stochastic approximation p.49 | *Raphael Kruse* Buffon's needle problem and the multilevel Monte Carlo algorithm p.78 | *Andreas Thalhammer* Characterisations of stiff stochastic differential equations p.44 |
| 11:30 – 12:00 | *Takashi Goda* The b-adic tent transformation for digital nets p.71 | *Jorge Zubelli* A hedged Monte Carlo approach to project evaluation p.49 | *Sonja Cox* Weak convergence for semi-linear SPDEs p.78 | *Harald Hinterleitner* A continuous-time particle filter for a nonlinear stochastic neural mass model p.29 |
| 12:00 – 12:30 | *Dong Nguyen* A subdivision algorithm for integration p.72 | *Gang Liu* Rare event simulation using reversible shaking transformation p.50 | *Christel Geiss* Using Wiener Chaos to simulate backward SDEs with jumps p.79 | *Miren Itsaso Hermosilla* Modelling and simulation of the ballistic protection limit V50 by exact sampling of an integrated Brownian motion process with drift p.27 |
| 12:30 – 14:00 | Lunch break | | | |

## Tuesday, July 7, 2015 – Afternoon

| | Lecture Hall A, S3 Z17 | Lecture Hall B, S3 Z18 | Lecture Hall C, S2 053 | Lecture Hall D, S2 059 |
|---|---|---|---|---|
| 14:00 – 15:00 | **Plenary Lecture** *Erich Novak* **Approximation of linear operators between Hilbert spaces with standard information** p.12  Chair: *Peter Kritzer* | | | |
| 15:00 – 15:30 | Coffee break – Science Park 3 | | | |
| | **Special Session** Quasi-Monte Carlo methods and applications, Part 2 of 2 p.70 Organizers: *Makoto Matsumoto and Dirk Nuyens* | **Special Session** Monte Carlo methods for PDEs p.58 Organizer: *Nizar Touzi* | **Special Session** Stochastic computation and complexity of high-dimensional problems, Part 2 of 4 p.77 Organizers: *Stefan Heinrich and Thomas Müller-Gronbach* | **Special Session** Information-based complexity, Part 2 of 2 p.51 Organizers: *Aicke Hinrichs and Erich Novak* |
| 15:30 – 16:00 | *Tor Sørevik* Polynomial interpolation on Chebyshev lattices p.72 | *Antoine Lejay* Monte Carlo methods for diffusion in media with interfaces p.58 | *Stefan Geiss* On the $L_p$-variation of BSDEs with path-dependent terminal conditions p.79 | *Robert Kunsch* New tractability results on Monte Carlo function approximation p.53 |
| 16:00 – 16:30 | *Kosuke Suzuki* Interlaced polynomial lattice rules achieving accelerating convergence for a class of smooth functions p.73 | *Xiaolu Tan* On the convergence of monotone schemes for path-dependent PDE p.59 | *Gowri Suryanarayana* Approximation in weighted cosine space p.80 | *Joscha Prochno* On mean outer radii of random polytopes p.53 |
| 16:30 – 17:00 | *Takehito Yoshiki* A fast and good approximation of Walsh figure of merit (WAFOM) as the QMC error for an exponential function p.73 | *Plamen Turkedjiev* Approximation of semilinear parabolic PDEs with GPUs via backward stochastic differential equations p.59 | *Thomas Daun* On the complexity of parametric integration problems p.80 | *Mario Ullrich* A universal cubature formula for functions with mixed derivatives p.54 |

## Wednesday, July 8, 2015 – Morning & Afternoon

| | Lecture Hall A, S3 Z17 | Lecture Hall B, S3 Z18 | Lecture Hall C, S2 053 | Lecture Hall D, S2 059 |
|---|---|---|---|---|
| 09:00 – 10:00 | **Plenary Lecture**<br>*Josef Dick*<br>**Numerical integration techniques for PDEs with random coefficients**  p.12<br>Chair: *Friedrich Pillichshammer* | | | |
| 10:00 – 10:30 | Coffee break – Science Park 3 | | | |
| | **Special Session**<br>Numerical methods for Levy driven SDEs  p.63<br>Organizers: *Steffen Dereich and Christel Geiss* | **Technical Session**<br>Chair: *Larisa Yaroslavtseva* | **Technical Session**<br>Chair: *Johann Brauchart* | **Technical Session**<br>Chair: *Paula Whitlock* |
| 10:30 – 11:00 | *Friedrich Hubalek*<br>Some special functions and equations arising from a simple binomial order book model  p.63 | *Guias Flavius*<br>Improving the stochastic direct simulation method with applications to evolution partial differential equations p.25 | *Samuel Herrmann*<br>The first-passage time of the Brownian motion to a curved boundary: an algorithmic approach  p.28 | *Azzouz Dermoune*<br>Multilevel Monte Carlo simulation of Bayesian Lasso p.23 |
| 11:00 – 11:30 | *Celine Labart*<br>Simulation of BSDEs with jumps by Wiener chaos expansion  p.63 | *Abdujabar Rasulov*<br>Monte Carlo solution system of parabolic equations  p.38 | *Madalina Deaconu*<br>New methods for approximating Brownian and Bessel hitting times  p.22 | *Abdul Lateef Haji Ali*<br>Optimization of mesh hierarchies in multilevel Monte Carlo samplers  p.25 |
| 11:30 – 12:00 | *Peter Tankov*<br>Optimal simulation schemes for Levy driven stochastic differential equations  p.64 | *Pedro Vilanova*<br>An efficient forward-reverse expectation-maximization algorithm for statistical inference in stochastic reaction networks  p.46 | *Mario Hefter*<br>Mixed precision multilevel Monte Carlo algorithms on hybrid computing systems p.27 | *Jerome Lelong*<br>Importance sampling for multilevel Monte Carlo  p.32 |
| 12:00 – 12:30 | *Sotirios Sabanis*<br>On tamed Euler and Milstein approximations of SDEs driven by Lévy noise  p.64 | *Andrea Barth*<br>Multilevel Monte Carlo simulation of statistical solutions to the Navier-Stokes equations  p.19 | *Christian Irrgeher*<br>Tractability of multivariate approximation defined over Hilbert spaces with exponential weights  p.30 | *Alvaro Moraes*<br>A multilevel adaptive reaction-splitting simulation method for stochastic reaction networks  p.35 |
| 12:30 – 18:00 | Lunch break; free afternoon for scientific discussions and collaborations | | | |
| 18:00 – 21:30 | Conference Dinner, "MS Linzerin" | | | |

**Thursday, July 9, 2015 – Morning I**

| | Lecture Hall A, S3 Z17 | Lecture Hall B, S3 Z18 | Lecture Hall C, S2 053 | Lecture Hall D, S2 059 |
|---|---|---|---|---|
| 09:00 – 10:00 | Lecture Hall A, S3 Z17 **Plenary Lecture** *Tony Lelièvre* **Adaptive importance sampling techniques**  p.13  Chair: *Pierre L'Ecuyer* | | | |
| 10:00 – 10:30 | Coffee break – Science Park 3 | | | |
| | **Special Session** Stochastic computation and complexity of high-dimensional problems, Part 3 of 4  p.77 Organizers: *Stefan Heinrich* and *Thomas Müller-Gronbach* | **Special Session** Stochastic partial differential equations, Part 1 of 2  p.74 Organizers: *Anne de Bouard* and *Erika Hausenblas* | **Technical Session** Chair: *Christoph Aistleitner* | **Technical Session** Chair: *Michaela Szölgyenyi* |
| 10:30 – 11:00 | *David Siska* Tamed Euler schemes for a class of stochastic partial differential equations  p.81 | *Annie Millet* Splitting up method for the 2D stochastic Navier-Stokes equations  p.74 | *Ralph Kritzinger* On symmetrized van der Corput sequences and generalized Hammersley point sets  p.31 | *Tim Brereton* Estimating the velocity of interacting random walkers in a disordered environment p.21 |
| 11:00 – 11:30 | *Michael Gnewuch* Results for high- and infinite-dimensional integration via function space embeddings  p.81 | *Raphael Kruse* On the weak approximation of stochastic partial differential equations  p.75 | *Henri Faure* A generalization of Sobol' sequences  p.24 | *Stefka Fidanova* Improved Monte Carlo algorithm for combinatorial optimization  p.24 |

**Thursday, July 9, 2015 – Morning II**

| | Lecture Hall A, S3 Z17 **Special Session** | Lecture Hall B, S3 Z18 **Special Session** | Lecture Hall C, S2 053 **Technical Session** | Lecture Hall D, S2 059 **Technical Session** |
|---|---|---|---|---|
| | Stochastic computation and complexity of high-dimensional problems, Part 3 of 4 p.77 Organizers: *Stefan Heinrich* and *Thomas Müller-Gronbach* | Stochastic partial differential equations, Part 1 of 2 p.74 Organizers: *Anne de Bouard* and *Erika Hausenblas* | Chair: *Christoph Aistleitner* | Chair: *Michaela Szölgyyenyi* |
| 11:30 – 12:00 | *Paweł Przybyłowicz* Minimal asymptotic errors for strong global approximation of SDEs with additive Poisson noise p.82 | *Mihali Kovacs* Weak approximation of the stochastic wave equation with additive Levy noise p.75 | *Florian Pausinger* A Koksma-Hlawka inequality for general discrepancy systems p.37 | *Karl Sabelfeld* Stochastic projection methods and applications to some inverse problems p.39 |
| 12:00 – 12:30 | *James Calvin* Global optimization of smooth multivariate functions p.82 | | *Hongmei Chi* Revisiting quasi-standard error p.22 | *Stefan Thonhauser* On extremal limits in uniform distribution theory p.44 |
| 12:30 – 14:00 | Lunch break | | | |

## Thursday, July 9, 2015 – Afternoon I

| Time | Lecture Hall A, S3 Z17 | Lecture Hall B, S3 Z18 | Lecture Hall C, S2 053 | Lecture Hall D, S2 059 |
|---|---|---|---|---|
| 14:00 – 15:00 | **Plenary Lecture** *Annika Lang* **Computing stochastic partial differential equations: a variety of challenges**  p.13 Chair: *Evelyn Buckwar* | | | |
| 15:00 – 15:30 | Coffee break – Science Park 3 | | | |
| | **Special Session** Stochastic computation and complexity of high-dimensional problems, Part 4 of 4  p.77 Organizers: *Stefan Heinrich* and *Thomas Müller-Gronbach* | **Special Session** Low-discrepancy point sets p.55 Organizers: *Gerhard Larcher* and *Harald Niederreiter* | **Technical Session** Chair: *Joscha Prochno* | **Technical Session** Chair: *Wilfried Meidl* |
| 15:30 – 16:00 | *Larisa Yaroslavtseva* On SDEs with arbitrary slow convergence rate for strong approximation at the final time  p.83 | *Makoto Matsumoto* Walsh figure of merit with derivation sensitivity parameter for fast QMC integration in higher dimensions  p.55 | *Chi-Ok Hwang* Monte Carlo methods for charge density on a conducting surface  p.29 | *Josef Leydold* A framework for testing, comparing and visualizing the performance of non-uniform random variate generators p.33 |
| 16:00 – 16:30 | *Thomas Müller-Gronbach* On tough quadrature problems for SDEs with bounded smooth coefficients p.83 | *Colas Schretter* Quasi-random point sequences for compressed sensing  p.56 | *Sylvain Maire* Monte Carlo algorithms for electrical impedance tomography  p.34 | *Shin Harase* Implementing 64-bit maximally equidistributed Mersenne Twisters  p.26 |

**Thursday, July 9, 2015 – Afternoon II**

| | Lecture Hall A, S3 Z17<br>**Special Session**<br>Stochastic computation and complexity of high-dimensional problems, Part 4 of 4  p.77<br>Organizers: *Stefan Heinrich* and *Thomas Müller-Gronbach* | Lecture Hall B, S3 Z18<br>**Special Session**<br>Low-discrepancy point sets  p.55<br>Organizers: *Gerhard Larcher* and *Harald Niederreiter* | Lecture Hall C, S2 053<br>**Technical Session**<br>Chair: *Joscha Prochno* | Lecture Hall D, S2 059<br>**Technical Session**<br>Chair: *Wilfried Meidl* |
|---|---|---|---|---|
| 16:30 – 17:00 | *Tigran Nagapetyan*<br>Variance reduced Monte Carlo path simulation method  p.84 | *Christoph Aistleitner*<br>Low-discrepancy sampling for non-uniform measures  p.56 | *Tzvetan Ostromsky*<br>Efficient variance-based technique for sensitivity analysis of a large air pollution model  p.36 | *Hiroshi Haramoto*<br>A method to check soundness of statistical tests on randomness  p.26 |
| 17:00 – 17:30 | *Anni Laitinen*<br>Hedging certain path-dependent options using fractional smoothness  p.84 | *Sigrid Grepstad*<br>Sets of bounded discrepancy for multi-dimensional irrational rotation  p.57 | *Jean Michel Sellier*<br>Is nature a Monte Carlo algorithm?  p.40 | *Efraim Shmerling*<br>Extensions of the Ziggurat algorithm for generating random variables  p.41 |
| 17:30 – 18:00 | | *Lev Markhasin*<br>Empirical risk minimization in Sobolev spaces using digital nets  p.57 | *Francesco Tesei*<br>Monte Carlo methods with control variate applied to groundwater flow problems  p.43 | *Paula Whitlock*<br>Efficient deterministic and non-deterministic pseudorandom number generation  p.46 |

## Friday, July 10, 2015 – Morning

| Time | Lecture Hall A, S3 Z17 | Lecture Hall B, S3 Z18 | Lecture Hall C, S2 053 | Lecture Hall D, S2 059 |
|---|---|---|---|---|
| 09:00 – 10:00 | **Plenary Lecture** *Robert Scheichl* **Multilevel uncertainty quantification** p.14 Chair: *Frances Kuo* | | | |
| 10:00 – 10:30 | Coffee break – Science Park 3 | | | |
| | **Special Session** Stochastic partial differential equations, Part 2 of 2 p.74 Organizers: *Anne de Bouard and Erika Hausenblas* | **Technical Session** Chair: *Christian Irrgeher* | **Technical Session** Chair: *Jan Vybiral* | **Technical Session** Chair: *Mario Ullrich* |
| 10:30 – 11:00 | *Romain Poncet* Multilevel Monte Carlo method for dispersive SPDEs p.76 | *Navideh Modarresi* Certain class of CARMA processes in financial models p.34 | *Quoc-Thong Le Gia* Discretization of stochastic heat equations with multiplicative noises on the unit sphere p.32 | *Vassil Alexandrov* Efficient scalable Monte Carlo preconditioners and hybrid methods for solving systems of linear algebraic equations p.18 |
| 11:00 – 11:30 | *Charles-Edouard Brehier* A high-order approximation scheme for sampling the invariant distribution for a class of parabolic SPDEs p.76 | *Raffaello Seri* Computational aspects of the distribution of generalized discrepancies p.40 | *Johann Brauchart* Trigonometric products p.21 | *Kristina Kapanova* A Monte Carlo approach to neural networks p.30 |
| 11:30 – 12:30 | **Plenary Lecture** *Stefan Geiss* **From interpolation to stochastic approximation and vice versa** p.15 Chair: *Ivan Dimov* | | | |
| 12:30 – 12:45 | Closing of the conference – Lecture Hall A, S3 Z17 | | | |