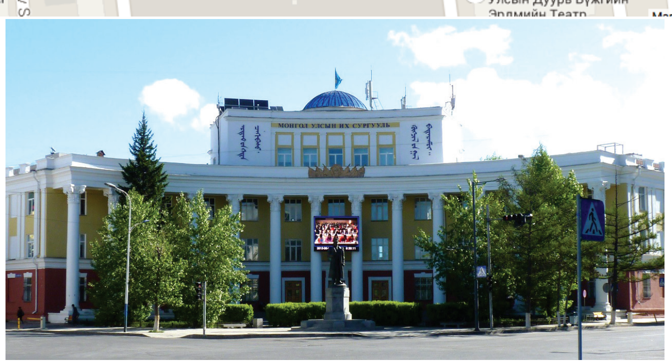
Stochastic Processes and Applications Mongolia 2015

27th July - 7th August 2015
National University of Mongolia
Ulan Bator
Mongolia

Basic information

Venue: The meeting will take place at the National University of Mongolia. The map below shows the campus of the University which is located in the North-Eastern block relative to the Government Palace and Chinggis Khaan Square (see the red circle with arrow indicating main entrance in map below) in the very heart of down-town Ulan Bator.

- All lectures, contributed talks and tutorials will be held in the Room 320 at 3rd floor, Main building, NUM.
- Registration and Opening Ceremony will be held in the Academic Hall (Round Hall) at 2nd floor of the Main building.
- The welcome reception will be held at the 2nd floor of the Broadway restaurant pub which is just on the West side of Chinggis Khaan Square (see the blue circle in map below).

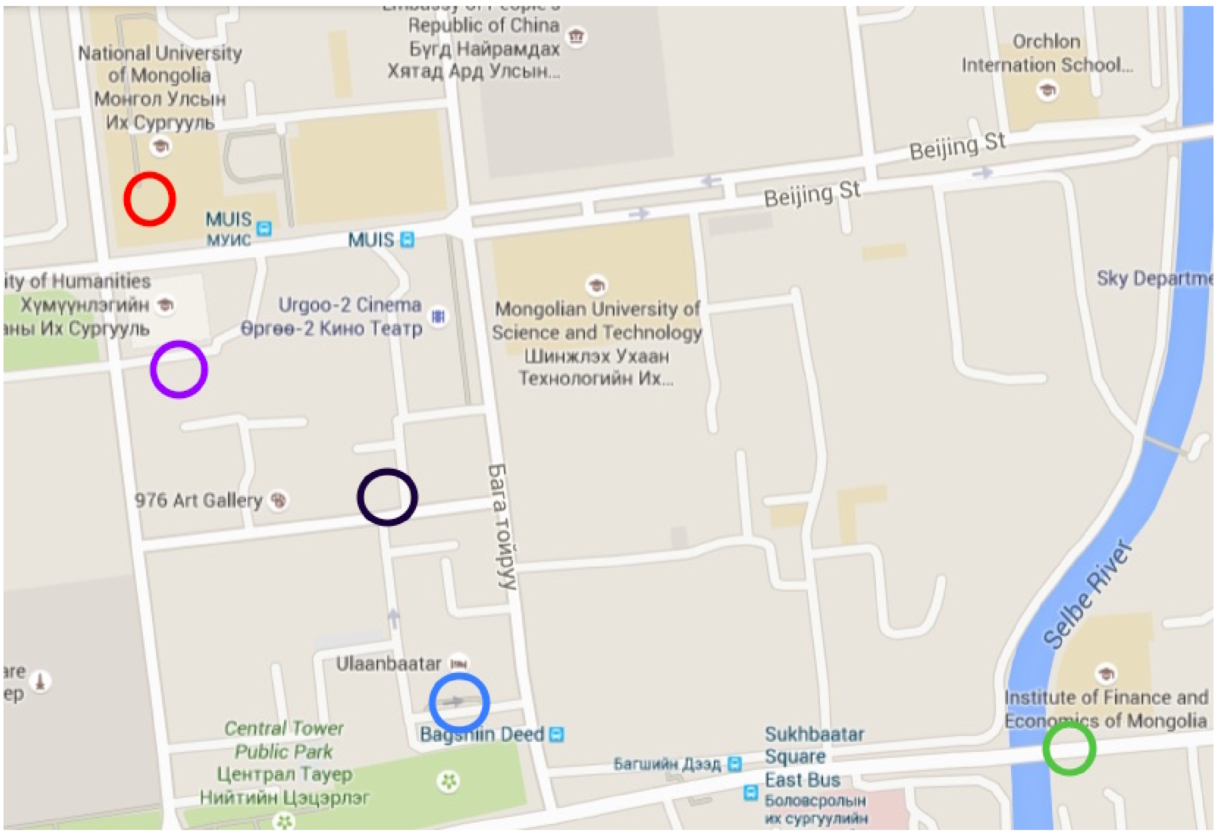


Facilities: The main venue is equipped with an electronic beamer, a blackboard and some movable white-boards. There will also be magic whiteboards which can be used on any vertical surface. White-board pens and chalk will be provided.

Breaks: Refreshments will be served between talks (see timetable below) at the conference venue.

Lunches: Arrangements for lunches will be announced at the start of the meeting.

Accommodation: Various places are being used for accommodation. The main accommodation are indicated on the map below relative to the National University (red circle): The Puma Imperial Hotel (purple circle), H9 Hotel (black circle), Ulanbaatar Hotel (blue circle), Student Dormitories (green circle)



Mentoring: A mentoring scheme will be running which sees more experienced academics linked with small groups of junior researchers. On your arrival at the school, there will be a list with the name of a mentor and the names of a small group of 3-4 students/young researchers. At much as possible, each group will contain at least one local student. During your stay, please locate your named group members via their name tag. They will likewise be instructed to locate you.You are encouraged to spend some of your time at lunch with your group. This is not a daily obligation, but it would be a useful ice-breaker. The senior academic in your group will be the first point of contact for mathematical assistance.

WEEK1	Monday 27/07	Tuesday 28/07	Wednesday 29/07	Thursday 30/07	Friday 31/07
08:00 – 08:30	Registration				
08:30 – 09:00					
09:00 – 09:30	Opening Cermony	Caballero	Beck	Bertoin	Oksendal
09:30 – 10:00	Caballero				
10:00 – 10:30		Lecture 3	Lecture 3	Lecture 3	Lecture 3
10:30 – 11:00	Lecture 1	Break	Break	Break	Break
11:00 – 11:30	Break	Beck	Oksendal	Goldschmidt	Pardo
11:30 – 12:00	Bertoin				
12:00 – 12:30		Lecture 2	Lecture 1	Topic Lecture	Topic Lecture
12:30 – 13:00	Lecture 1	Lunch	Lunch	Lunch	Lunch
13:00 – 13:30	Lunch				
13:30 – 14:00					
14:00 – 14:30		Bertoin	Excursion	Oksendal	Goldschmidt
14:30 – 15:00	Beck				
15:00 – 15:30		Lecture 2		Lecture 2	Topic Lecture
15:30 – 16:00	Lecture 1	Break		Break	Break
16:00 – 16:30	Break	Caballero		Lambert	Baurdoux
16:30 – 17:00	Caballero				
17:00 – 17:30		Lecture 4		Topic Lecture	Topic Lecture
17:30 – 18:00	Lecture 2	Tutorials		Tutorials	Tutorials
18:00 – 18:30					
18:30 – 19:00	Welcome reception				
19:00 – 19:30					

WEEK2	Monday 03/08	Tuesday 04/08	Wednesday 05/08	Thursday 06/08	Friday 07/08
08:00 – 08:30	Registration				
08:30 – 09:00					
09:00 – 09:30	Behme	Doering	Eberlein	Doering	Borot
09:30 – 10:00					
10:00 – 10:30	Topic Lecture	Lecture 1	Lecture 3	Lecture 2	Lecture 3
10:30 – 11:00	Break	Break	Break	Break	Break
11:00 – 11:30	Eberlein	Eberlein	Borot	Borot	Doering
11:30 – 12:00					
12:00 – 12:30	Lecture 1	Lecture 2	Lecture 1	Lecture 2	Lecture 3
12:30 – 13:00					
13:00 – 13:30	Lunch	Lunch	Lunch	Lunch	Lunch
13:30 – 14:00					
14:00 – 14:30	Remco van der Hofstad	Fausto Gozzi		Uuganbaatar Ninjbat	Kazutoshi Yamazaki
14:30 – 15:00				Gantumur Tsogtgerel	
15:00 – 15:30	Kazumasa Kuwada	Erdenebaatar Chadraa	Excursion	Ricardo Romo Romero	Barsbold Bazarragchaa
15:30 – 16:00	Break	Break		Break	Break
16:00 – 16:30	Kumiko Hattori	Studying in Germany		Yue Yuen Kwok	Josef Najundel
16:30 – 17:00		(Panel discussion)			
17:00 – 17:30	Yanxia Ren	Poster Session		Ju-Yi Jen	Andrej Depperschmidt
17:30 – 18:00	Tutorials	and Reception		Tutorials	Closing ceremony
18:00 – 18:30					

Minicourses

Fragmentation-coalescence models and applications.

(*Prof. Jean Bertoin*):

The basic concept of exchangeable partitions of the natural numbers is introduced and how this plays a fundamental role in building Markov processes that are valued in the space of such partitions. The case of fragmentation and coalescent processes are developed with focus on their applications. In the case of fragmentation processes, applications in the mining industry are mentioned. In the case of coalescent processes, connections with modeling genetic diversification are mentioned.

Introduction to PDEs.

(*Prof. Lisa Beck)*:

In this course we discuss some basic results and techniques from the PDE theory, which arise in the study of stochastic differential equations. In this way, we provide some background for the course "Introduction to stochastic calculus and applications". We start with some fundamental properties of harmonic functions (i.e. of solutions to the Laplace equation), such as the mean value property, the maximum principle and Harnack's inequality, which allow for a stochastic reformulation in terms of a stopped Brownian motion. We then present some variants for time-dependent PDEs, with an emphasis on the heat equation as model equation for general diffusion processes. Finally, we draw a connections between partial differential equations and optimization / minimization problems, by explaining some basics of the Euler-Lagrange formalism. The theory covered in this course will be illustrated by several reoccuring examples, both during the lectures and tutorials.

Introduction to Random Matrix Theory.

(*Dr. Gaetan Borot)*:

Lecture 1. The N eigenvalues of a large symmetric (or hermitian) random matrix of size N are far from being independent random variables: they repel each other. This results in new limit laws of random variables, that can be computed in simple models of random matrices (the Gaussian ensembles), and turn out to be universal and appear as well in other domains of mathematics and physics.
Lecture 2. We will discuss equilibrium measures and large deviation theory for eigenvalue statistics. I will then introduce Schwinger-Dyson equations – which provide a general tool to study statistical physics models – for some simple random matrix ensembles. I will describe some results about the large N asymptotic expansion, in particular the "topological expansions".
(Choice will be made later between 3a. or 3b. depending on the time and audience' interest)
Lecture 3a. We will see the machinery of Schwinger-Dyson equations at work, in the problem of obtaining finite size corrections to large deviations functions for the maximum eigenvalue of a random matrix. We will deduce an elementary and heuristic computation concerning the tails of the (universal) limit law of fluctuations of the maximum eigenvalue, which is called Tracy-Widom law.
Lecture 3b. There is a rich combinatorics behind the Gaussian hermitian matrix model. It is described by "pairings": the large N limit isolates planar pairings, and the finite N corrections sort the pairings by their topology. This idea has been exploited in designing faster algorithms to predict the tertiary structure of RNA sequences.

Introductory stochastic calculus and applications.

(*Prof. Maria-Emilia Caballero*):

This course will give an introduction to the theory of stochastic calculus and will serve as a foundation for the other mini-courses. The course will introduce Brownian motion as a Markov process and focus largely on the construction of the Brownian integral and its associated Ito calculus. En route examples of where stochastic calculus is important will be mentioned, leaving open the possibility for further discussion with students during the research school. The course will conclude with some attention given to the case of Lévy processes and the generalization of Itos calculus for this class of processes.

Self-Similar Markov Processes.

(*Prof. Leif Döring*):

Positive Self-Similar Markov processes are closely connected to Lévy Processes. The aim of this lectures is to discuss a reformulation of Lampertis representation through stochastic differential equations (SDEs) driven by Poisson point processes. Lampertis representation is equivalent to the Lamperti SDE for positive initial conditions but in contrast to Lampertis representation the Lamperti SDE readily extends to zero initial conditions. On the way existence and uniqueness for jump-type SDEs will be discussed.

Introductory models in mathematical finance.

(*Prof. Ernst Eberlein*):

This course will provide a rapid introduction into classical Black-Scholes theory and its deficiencies. The course will then move on to discussing a more modern perspective on financial modeling, drawing attention to the large variety in different types of financial contracts as well as the rich family of off-the-shelf stochastic processes and statistical methods, which are used to model such pricing scenarios. The ideology of using mathematics to establish fair pricing and giving a quantitative perspective to "risk exposure" will be central to the presentation. This course will be aimed equally at analysts from the several large banks in Mongolia as much as academic participants.

Stochastic control theory.

(*Prof. Bernt Oksendal*):

Building on the first course on stochastic analysis, this course will introduce some basic principles of optimal stochastic control theory in the setting of models driven by Brownian motion and, more generally, Lévy processes. Two main solution methods will be presented, namely (i) the stochastic maximum principle and (ii) dynamic programming and the HJB equation. Applications that are of pertinence to mathematical finance will also be discussed, for example the problem of optimal portfolio choice and risk minimization in a financial market.

Topic Lectures

Erik Baurdoux

Title: Optimal stopping theory and applications

Abstract: We start with the classical secretary problem, where our aim is to choose the best candidate out of a number of applicants appearing in front of us in a random order, without having the option of going back to a previously rejected applicant. This example of an optimal stopping problem has been well studied and it allows us to illustrate in a rather simple setting some fundamental properties of more general optimal stopping problems. We will then move our attention to Lévy processes, which form a surprisingly rich class and for example include Brownian motion and (compound) Poisson processes.

In the general Lévy setting we consider the well-known optimal stopping problem of the American put option as well as an optimal prediction problem where the aim is to approximate optimally the time at which a Lévy process attains its maximal value. By studying these examples, we will also be touching on some important concepts from the general theory of optimal stopping.

Anita Behme

Title: Time Series Analysis in a nutshell

Abstract: In many scientific fields the data to be analyzed (e.g. meteorological data, stock prices, ...) form a sequence of observations given at a sequence of time points. Therefore, as counterpart to the stochastic processes in continuous time which are treated in several other courses of this school, this lecture introduces basic concepts of stochastic processes in discrete time, that is of time series. Here, our main focus will lie on introducing fundamental time series models which are widely used in practice and for which we will discuss some of their properties and possible applications.

Christina Goldschmidt

Title: Random trees

Abstract: Tree structures are very common in nature, and we often want to model trees which are somehow randomly generated. In mathematics, we think of trees as connected graphs (or networks) with no cycles. In these lectures, I will discuss some simple models of random trees and what we can say about large instances of them. The first lecture will focus on Galton-Watson branching processes. We think of an idealised biological population (say of cells) in which each individual lives for a unit of time, gives birth to a random number of children (with a given distribution) and then dies. What can we say about the way the population size evolves? Or about the family tree of that population?

In the second lecture, we will take a more combinatorial perspective. What does a tree with n vertices, chosen uniformly at random from all the possibilities, look like for large n? It turns out that we can use Galton-Watson branching processes to help us answer this question. Along the way, we will encounter several beautiful bits of combinatorics and probability, including Cayley's formula, random walks and (finally) Brownian motion.

Amaury Lambert

Title: Random trees in evolutionary biology

Abstract: We will review some of the main models of random trees used in evolutionary biology to model gene trees or species trees. We will study the reconstructed tree, which is the tree spanned by alive individuals/species at the same fixed time, sometimes also called the coalescent tree. Time allowing, we will display two one-parameter families of binary random trees interpolating between the caterpillar tree on the one hand, and on the other hand the the maximally balanced tree, or the Kingman coalescent, respectively.

Juan Carlos Pardo

Title: Lévy processes

Abstract:We will give a basic introduction to the theory of Lévy processes. Our objective will be to cover the basic definition and construction of the general class. In particular using Poisson point processes, we give the classical Lévy-Itô decomposition, showing how every Lévy process can be broken into the sum of three independent processes: a diffusive process, a compound Poisson process of 'large' jumps and a third process which arises as the limit (in an appropriate sense) of a sequence of compensated compound Poisson processes, which deals with up to a countable infinity of small jumps. We shall also mention various special cases of Lévy processes as well as alluding to a variety of applications

Contributed Talks

Barsbold Bazarragchaa

Title: Optimal Control for Minimizing Ruin Probability of a Controlled Diffusion Process with a Linear Control

Abstract: In this research, we consider stochastic optimal control problem for minimizing ruin probability of a controlled diffusion process with linear control terms in the drift and diffusion parts. By means of ruin we understand the first occurence of such event that the state variables drop below given lower bound. A main goal is to describe optimal control and optimal process in terms of problem data. In order to achieve it, we formulate the corresponding Hamilton-Jacobi-Bellman equation. We do not solve it explicitly. However this, we find the optimal control and describe optimal process. Under some convinient assumptions the optimal process has a closed form solution. In order to demonstrate practical importance of this class of problems, we consider also optimal investment problem for insurance company as a case study.

Erdenebaatar Chadraa

Title: Modelling Financial Time-Series with COGARCH processes

Abstract: In this presentation, a family of continuous-time generalized autoregressive conditionally heteroskedastic (COGARCH) processes, generalizing the COGARCH$(1,1)$ process of Klüppelberg, et. al. (2004), is introduced. The resulting COGARCH(p,q) processes, $q \geq p \geq 1$, exhibit many of the characteristic features of observed financial time series, while their corresponding volatility and squared increment processes display a broader range of autocorrelation structures than those of the COGARCH$(1,1)$ process. We established sufficient conditions for the existence of a strictly stationary non-negative solution of the equations for the volatility process and, under conditions which ensure the finiteness of the required moments, determined the autocorrelation functions of both the volatility and squared increment processes. The volatility process was found to have the autocorrelation function of a continuous-time ARMA process while the squared increment process has the autocorrelation function of an ARMA process. The least-squares method was used to estimate the parameters of the COGARCH$(2,2)$ processes. We gave conditions under which the volatility and the squared increment processes are strongly mixing, from which it follows that the least-squares estimators are strongly consistent and asymptotically normal. Finally, the model was fitted to a high frequency dataset.

Andrej Depperschmidt

Title: Random walk in dynamic random environment generated by the reversal of discrete time contact process

Abstract: We consider a random walk in a dynamic random environment generated by the time reversal of the discrete time contacts process. Alternatively, it can be interpreted as a random walk on the backbone of the oriented percolation cluster. Via a suitable regeneration construction we obtain a law of large numbers and a central limit theorem (averaged and quenched). As time permits, we also discuss some generalisations of the above random walk.
Based on joint work with Matthias Birkner, Jiri Cerny and Nina Gantert.

Fausto Gozzi

Title: Stochastic Control in Infinite Dimension: why it worth studying

Abstract: In this talk we present some applied problems (mainly in Economics and Finance) which are naturally formulated as stochastic control problems in infinite dimensional spaces. Then we briefly discuss the available methods of solution and some recent results.

Kumiko Hattori

Title: Self-avoiding walk, loop-erased random walk and self-repelling walk on a fractal.

Abstract: A self-avoiding walk and a loop-erased random walk are typical examples of non-Markov random walks. We construct a one-parameter family of self-avoiding walks on the Sierpinski gasket, connecting the loop-erased random walk and the 'standard' self-avoiding walk continuously. We prove the existence of the scaling limits and show some properties of the limit processes.

Remco van der Hofstad

Title: Recent progress in high-dimensional percolation.

Abstract: It is now 25 years ago that Hara and Slade published their seminal work on the mean-field behavior of percolation in high-dimensions, showing that at criticality there is no percolation and identifying several percolation critical exponents. The main technique used is the lace expansion, a perturbation technique that allows us to compare percolation paths to random walks based on the idea that faraway pieces of percolation paths are almost independent in high dimensions.

In the past few years, a number of novel results have appeared for high-dimensional percolation. I intend to highlight the following topics:

(1) The recent computer-assisted proof, with Robert Fitzner, that identifies the critical behavior of nearest-neighbor percolation above 11 dimensions using the so-called Non-Backtracking Lace Expansion (NoBLE). While these results are expected to hold above 6 dimensions, the previous and unpublished proof by Hara and Slade only applied above 18 dimensions;

(2) The identification of arm exponents in high-dimensional percolation in two works by Asaf Nachmias and Gady Kozma, using a clever and novel difference inequality argument;

(3) The finite-size scaling for percolation on a high-dimensional torus, where the largest connected components share many features to the Erdos-Renyi random graph. In particular substantial progress has been made concerning percolation on the hypercube, where in joint work with Asaf Nachmias we have managed to avoid the lace expansion altogether.

We assume no prior knowledge about percolation.

Kazumasa Kuwada

Title: Optimal transport, heat flow and coupling of Brownian motions.

Abstract: In this talk, I will survey recent developments in the connection between the theory of optimal transport and geometric analysis of heat flows. The latter one can be regarded as a gradient flow in the space of probability measures equipped with a structure coming from the optimal transport. In this context, both of them are closely related with the synthetic notion of lower Ricci curvature bound of Sturm, Lott and Villani. If time permits, I would like to mention an application of them to new construction of a coupling of canonically associated diffusion processes (”Brownian motions”) which works even on non-smooth spaces.

Yue Kuen Kwok

Title: Analytic Pricing of Discrete Exotic Variance Swaps and Timer Options.

Abstract: We consider pricing of exotic variance swaps and timer option written on the discretely sampled realized variance of an underlying asset under stochastic volatility models. Timer options are barrier style options in the volatility space. A typical timer option is similar to its European vanilla counterpart, except with uncertain expiration date. The finite-maturity timer option expires either when the accumulated realized variance of the underlying asset has reached a pre-specified level or on the mandated expiration date, whichever comes earlier. Thanks to the analytical tractability of the joint moment generating functions of the affine models, we manage to derive closed form analytic formulas for variance swap products with corridor features. Interestingly, the closed form pricing formulas of the continuously sampled counterparts can be deduced from those of the discretely sampled variance swaps, while direct derivation of pricing formulas of the corridor type variance swaps based on continuously sampling may appear to be insurmountable. We also propose an effective analytic approach for pricing finite-maturity discrete timer options under 3/2-model by decomposing into a portfolio of timelets. The challenge in the pricing procedure is the incorporation of the barrier feature in terms of the accumulated realized variance instead of the usual knock-out feature of hitting a barrier by the underlying asset price.

Josef Najnudel

Title: On sigma-finite measures related to the Martin boundary of recurrent Markov chains

Abstract: In this talk, we construct, from a recurrent Markov chain X, some sigma-finite measures which can be informally considered as laws of X conditioned to go to infinity in a suitably way. These sigma-finite measures are directly related to the Martin boundary of the Markov chain.

Uuganbaatar Ninjbat

Title: Probabilistic aspects of voting

Abstract: In this talk we discuss some classical results in voting theory that involve probability including Bertrand's ballot problem, Condorcet's jury theorem and Gibbard's random dictator theorem. By doing so, we aim to explore an application of probability theory into the domain of social sciences.

Yanxia Ren

Title: Central Limit Theorems for supercritical superprocesses

Abstract: We establish a central limit theorem for a large class of general supercritical superprocesses with spatially dependent branching mechanisms satisfying a second moment condition. We are able to characterize the limit Gaussian field. In the case of supercritical super Ornstein-Uhlenbeck processes with non-spatially dependent branching mechanisms, our central limit theorem reveals more independent structures of the limit Gaussian field.
We also establish some functional central limit theorems for the supercritical superprocesses mentioned above. In the particular case when the state E is a finite set and the underline motion is an irreducible Markov chain on E, our results are superprocess analogs of the functional central limit theorems of Janson(2004) for supercritical multitype branching processes.

Ricardo Romo Romero

Title: Discrete time Stochastic Processes.

Abstract: In this talk, we introduce the Backward Stochastic Differential Equations and Filtration Enlargement Theory but in discrete time context. Also, we present new results that we do not have in continuous time and some applications.

Gantumur Tsogtgerel

Title: The Navier-Stokes equations with random initial data

Abstract: We In this expository talk, we will discuss some interesting recent results on the Navier-Stokes equations with random initial data. These results reveal that evolution equations with random initial data apparently behave much better than their deterministic counterparts, although at the moment it is not completely clear how one could meaningfully compare deterministic and randomized results, and what would be the impact of these results on the Navier-Stokes regularity problem.

Kazutoshi Yamazaki

Title: Optimality of Refraction Strategies for Spectrally Negative Lévy Processes.

Abstract: We revisit a stochastic control problem of optimally modifying the underlying spectrally negative Lévy process. A strategy must be absolutely continuous with respect to the Lebesgue measure, and the objective is to minimize the total costs of the running and controlling costs. Under the assumption that the running cost function is convex, we show the optimality of a refraction strategy. The proof of convergence to the reflection strategy as well as numerical illustrations are also given.

Ju-Yi Yen

Title: Regenerative process Monte Carlo methods

Abstract: Let $(S, \mathcal{S}, \pi)$ be a measure space. Let $f : S \to \mathbb{R}$ be $\mathcal{S}$ measurable and integrable with respect to π. Let $\lambda \equiv \int_S f d\pi$. An important problem in the theory and application of statistical methods to many areas of sciences and humanities is the estimation of λ. If π is a probability measure (i.e. $\pi(S) = 1$), there are currently two well-known statistical procedures for this. One is based on iid sampling from π, also called IID Monte Carlo (IIDMC); the other method is Markov chain Monte Carlo (MCMC). Both IIDMC and MCMC require that the target distribution π is a probability distribution or at least a totally finite measure. In this talk, we discuss Monte Carlo methods to statistically estimate the integrals of a class of functions with respect to some distributions that may not be finite (i.e. $\pi(S) = \infty$) based on regenerative stochastic processes in continuous time such as Brownian motion.

Committees

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- Prof. Andreas Kyprianou (University of Bath, UK)
- Dr. Tsogzolmaa Saizmaa (National University of Mongolia)

International Organizers

- Dr. Erik Baurdoux (London School of Economics, UK)
- Carina Geldhauser (Bonn University, Germany)

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- Dr. Ganbat Atarsaikhan (NUM, Mongolia)
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Sponsorship

This even has been very generously sponsored by: Centre International de Mathématiques Pures et Appliquées (CIMPA), Deutscher Akademischer Austauschdienst (DAAD), Mongolian National University (NUM), Mongolian University of Science and Technology (MUST), Mongolian Agricultural Commodities Exchange (MACE), and Tenger Insurance, Mongolia.

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GANTUMUR	TSOGTGEREL	CANADA	McGILL UNIVERSITY, MONTREAL
GELDHAUSER	CARINA	GERMANY	UNIVERSITY OF BONN
GERELMAA	GERELT-OD	MONGOLIA	NATIONAL UNIVERSITY OF MONGOLIA
GERELTUYA	BAYANMUNKH	MONGOLIA	NATIONAL UNIVERSITY OF MONGOLIA
GOLDSCHMIDT	CHIRSTINA	UNITED KINGDOM	UNIVERSITY OF OXFORD
GOZZI	FAUSTO	ITALY	LUISS UNIVERSITY OF ROME
HÄPPÖLÄ	JUHO	SAUDI ARABIA	KAUST
HATTORI	KUMIKO	JAPAN	TOKYO METROPOLITAN UNIVERSITY
HE	HUI	CHINA	BEIJING NORMAL UNIVERSITY
HORTON	EMMA	UNITED KINGDOM	UNIVERSITY OF BATH
JAMIYANSHARAV	BATCHULUUN	MONGOLIA	NATIONAL UNIVERSITY OF MONGOLIA
KHONGORZUL	DASH	MONGOLIA	NATIONAL UNIVERSITY OF MONGOLIA
KIM	SOJUNG	SOUTH KOREA	KAIST
KUMAR	CHAMAN	UNITED KINGDOM	UNIVERSITY OF EDINBURGH
KUNTSCHIK	ANDREA	GERMANY	FRANKFURT UNIVERSITY
KUWADA	KAZUMASA	JAPAN	TOKYO INSTITUTE OF TECHNOLOGY
KWOK	YUE KUEN	HONG KONG	HKUST
KYPRIANOU	ANDREAS	UNITED KINGDOM	UNIVERSITY OF BATH
LALAOUI BEN CHERIF	SIDI MOHAMED	MOROCCO	CADI AYYAD UNIVERSITY
LAMBERT	AMAURY	FRANCE	UNIVERSITY OF PARIS VI AND COLLEGE DE FRANCE
LOZANO TORRUBIA	PABLO	UNITED KINGDOM	UNIVERSITY OF NOTTINGHAM
MA	CHUNHUA	CHINA	NANKAI UNIVERSITY
MAKHGAL	GANBOLD	MONGOLIA	NATIONAL UNIVERSITY OF MONGOLIA

LAMBERT	AMAURY	FRANCE	UNIVERSITY OF PARIS VI AND COLLEGE DE FRANCE
LOZANO TORRUBIA	PABLO	UNITED KINGDOM	UNIVERSITY OF NOTTINGHAM
MA	CHUNHUA	CHINA	NANKAI UNIVERSITY
MAUDUIT	CHRISTIAN	FRANCE	CIMPA/MARSAILLE-LUMINY
MAKHGAL	GANBOLD	MONGOLIA	NATIONAL UNIVERSITY OF MONGOLIA
MANDUKHAI	OTGONBAATAR	MONGOLIA	NATIONAL UNIVERSITY OF MONGOLIA
MATETSKI	KONSTANTIN	UNITED KINGDOM	UNIVERSITY OF WARWICK
MAULIDI	IKHSAN	INDONESIA	BOGAR AGRICULTURAL UNIVERSITY
MUNGUNSUKH	SHIRNEN	MONGOLIA	INSTITUTE OF HUMANITIES
MUNGUNTSETSEG	ALTANTSETSEG	MONGOLIA	NATIONAL UNIVERSITY OF MONGOLIA
MUNKHDULAM	ERDENEKHUYAG	MONGOLIA	INSTITUTE OF FINANCE AND ECONOMICS
MUNKHJARGAL	BATKHUYAG	MONGOLIA	INSTITUTE OF FINANCE AND ECONOMICS
NAJNUDEL	JOSEPH	FRANCE	UNIVERSITY OF TOULOUSE PAUL SABATIER
NANZADRAGCHAA	DAMBASUREN	MONGOLIA	NATIONAL UNIVERSITY OF MONGOLIA
NARANJARGAL	PUREV-OCHIR	MONGOLIA	NATIONAL UNIVERSITY OF MONGOLIA
NAVCHAA	TSERENDORJ	MONGOLIA	NATIONAL UNIVERSITY OF MONGOLIA
NIKITENKO	ANTON	AUSTRIA	INSTITUTE OF SCIENCE AND TECHNOLOGY
NOBA	KEI	JAPAN	KYOTO UNIVERSITY
OKSENDAL	BERNT	NORWAY	UNIVERSITY OF OSLO
ORGIL	BAT-ULZII	MONGOLIA	INSTITUTE OF FINANCE AND ECONOMICS
OTGONBAYAR	UUYE	MONGOLIA	NATIONAL UNIVERSITY OF MONGOLIA
OYUN	BATKHUYAG	MONGOLIA	TENGER INSURANCE
OYUNDELGER	M	MONGOLIA	NATIONAL UNIVERSITY OF MONGOLIA
OYUNERDENE	NARANKHUU	MONGOLIA	NATIONAL UNIVERSITY OF MONGOLIA
OYUNERDENE	NAMSRAI	MONGOLIA	NATIONAL UNIVERSITY OF MONGOLIA
OYUNERDENE	SELENGE	MONGOLIA	STATE BANK
PAN	YUQING	AUSTRALIA	UNIVERSITY OF MELBOURNE
PAPAGEORGIOU	IOANNIS	SWEDEN	UPPSALA UNIVERSITY
PARDO	JUAN CARLOS	MEXICO	CIMAT
PROKOPENKO	EVGENY	RUSSIA	SOBOLEV INSTITUTE, NOVOSIBIRSK
PUREVSUREN	DAMBA	MONGOLIA	NATIONAL UNIVERSITY OF MONGOLIA
PUREVTSOGT	NUGJGAR	MONGOLIA	NATIONAL UNIVERSITY OF MONGOLIA
RANDRIAMANIRISOA	SAHA HASINA	MADAGASCAR	UNVERSITY OF ANTANANARIVO
REN	YANIXA	CHINA	PEKING UNIVERSITY
REZAPOUR	MOHSEN	IRAN	UNIVERSITY OF KERMAN
ROMO ROMERO	RICARDO	FRANCE	UNIVERSITY D'EVRY
SARANTUYA	TSEDENDAMBA	MONGOLIA	MONGOLIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY
SAVINKINA	EKATERINA	RUSSIA	SOBOLEV INSTITUTE, NOVOSIBIRSK
SCHREITER	MAXIMILIAN	GERMANY	UNIVERSITY OF LEIPZIG
SETIYOWATI	SUSI	INDONESIA	BANDUNG INSTITUTE OF TECHNOLOGY
SONG	YANG	CHINA	FUDAN UNIVERSITY, SHANGHAI
SULISTIANINGSIH	EVY	INDONESIA	TANJUNGPURA UNIVERSITY
SUMIYA	BAASANDORJ	MONGOLIA	MONGOLIAN STATE UNIVERSITY OF EDUCATION
SURYAWAN	HERRY PRIBAWANTO	INDONESIA	SANATA DHARMA UNIVERSITY
TAIVANSAIKHAN	TSETSENDELGER	MONGOLIA	NEW MONGOL INSTITUTE OF TECHNOLOGY
TSERENBAT	OIROV	MONGOLIA	NATIONAL UNIVERSITY OF MONGOLIA
TSOGZOLMAA	SAIZMAA	MONGOLIA	NATIONAL UNIVERSITY OF MONGOLIA
TSUKADA	HIROSHI	JAPAN	OSAKA CITY UNIVERSITY
TUMENBAYAR	DAVAANYAM	MONGOLIA	NATIONAL UNIVERSITY OF MONGOLIA
UDOYE	ADAOBI MMACHUKWU	NIGERIA	UNIVERSITY OF IDABAN
UNDARMAA	ENKHBAYAR	MONGOLIA	TENGER INSURANCE
UNDRAM	CHINGGIS	MONGOLIA	
UUGANBAATA	NINJBAT	MONGOLIA	NATIONAL UNIVERSITY OF MONGOLIA
UUGANBAYAR	SODNOM	MONGOLIA	STATE BANK
VAKEROUDIS	STAVROS	CYPRUS	UNIVERSITY OF CYPRUS
VAN DER HOFSTAD	REMCO	NETHERLANDS	TECHNICAL UNIVERSITY OF EINDHOVEN
WETZER	ELISABETH	AUSTRIA	VIENNA UNIVERSITY OF TECHNOLOGY
WRESCH	LUKAS	GERMANY	BIELEFELD UNIVERSITY
XU	QING	CHINA	FUDAN UNIVERSITY, SHANGHAI
YAMAZAKI	KAZUTOSHI	JAPAN	KANSAI UNIVERSITY
YANG	TING	CHINA	BEIJING INSTITUTE OF TECHNOLOGY
YEN	JU-YI	UNITED STATES	UNIVERSITY OF CINCINATI
YU	LICHAO	CHINA	FUDAN UNIVERSITY, SHANGHAI
ZAMANDII	SANDAGDORJ	MONGOLIA	NATIONAL UNIVERSITY OF MONGOLIA
ZHUO	YU	CHINA	FUDAN UNIVERSITY, SHANGHAI
ZOLBAYAR	E	MONGOLIA	NATIONAL UNIVERSITY OF MONGOLIA
ZOLJARGAL	MUNKHJARGAL	MONGOLIA	NATIONAL UNIVERSITY OF MONGOLIA
ZORIGT	CHOINKHOR	MONGOLIA	MONGOLIAN STATE UNIVERSITY OF EDUCATION