Final Program and Abstracts

SIAM Conference on

Financial Mathematics & Engineering

November 17-19, 2016
Sheraton Austin Hotel at the Capitol
Austin, Texas, USA

Sponsored by the SIAM Activity Group on Financial Mathematics and Engineering

The Activity Group on Financial Mathematics and Engineering focuses on research and practice in financial mathematics, computation, and engineering. Its goals are to foster collaborations among mathematical scientists, statisticians, computer scientists, computational scientists, and researchers and practitioners in finance and economics, and to foster collaborations in the use of mathematical and computational tools in quantitative finance in the public and private sector. The activity group promotes and facilitates the development of financial mathematics and engineering as an academic discipline.

siam

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SIAM Registration Desk

The SIAM registration desk is located in the Ballroom Prefunction Area. It is open during the following hours:

Wednesday, November 16
5:00 PM – 7:00 PM

Thursday, November 17
7:30 AM – 7:00 PM

Friday, November 18
8:00 AM – 4:00 PM

Saturday, November 19
8:00 AM – 3:30 PM

Hotel Address

Sheraton Austin Hotel at the Capitol
701 East 11th Street
Austin, Texas, 78701 USA
Phone Number: +1-(512) 478-1111
Toll Free Reservations (USA and Canada): +1-800-325-3535
Fax: +1-512-478-3700
Hotel web address:
http://www.sheraton.com/austin

Hotel Telephone Number

To reach an attendee or leave a message, call +1-512-478-1111. If the attendee is a hotel guest, the hotel operator can connect you with the attendee's room.

Hotel Check-in and Check-out Times

Check-in time is 3:00 PM.

Check-out time is 12:00 PM.

Child Care

The Sheraton Austin Hotel at the Capitol recommends Austin's Capital Grannies (*http://austin-babysitter.com/*) for attendees interested in child care services. Attendees are responsible for making their own child care arrangements.

Corporate Members and Affiliates

SIAM corporate members provide their employees with knowledge about, access to, and contacts in the applied mathematics and computational sciences community through their membership benefits. Corporate membership is more than just a bundle of tangible products and services; it is an expression of support for SIAM and its programs. SIAM is pleased to acknowledge its corporate members and sponsors. In recognition of their support, non-member attendees who are employed by the following organizations are entitled to the SIAM member registration rate.

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United States Department of Energy

U.S. Army Corps of Engineers, Engineer Research and Development Center

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List current October 2016.

Funding Agency

SIAM and the conference organizing committee wish to extend their thanks and appreciation to U.S. National Science Foundation for its support of this conference.

Leading the applied mathematics community

Join SIAM and save!

SIAM members save up to $130 on full registration for the 2016 SIAM Conference on Financial Mathematics & Engineering! Join your peers in supporting the premier professional society for applied mathematicians and computational scientists. SIAM members receive subscriptions to *SIAM Review, SIAM News* and *SIAM Unwrapped*, and enjoy substantial discounts on SIAM books, journal subscriptions, and conference registrations.

If you are not a SIAM member and paid the *Non-Member* or *Non-Member Mini Speaker/Organizer* rate to attend the conference, you can apply the difference between what you paid and what a member would have paid ($130 for a *Non-Member* and $65 for a *Non-Member Mini Speaker/Organizer*) towards a SIAM membership. Contact SIAM Customer Service for details or join at the conference registration desk.

If you are a SIAM member, it only costs $10 to join the SIAM Activity Group on the Financial Mathematics & Engineering (SIAG/FME). As a SIAG/FME member, you are eligible for an additional $10 discount on this conference, so if you paid the SIAM member rate to attend the conference, you might be eligible for a free SIAG/FME membership. Check at the registration desk.

Free Student Memberships are available to students who attend an institution that is an Academic Member of SIAM, are members of Student Chapters of SIAM, or are nominated by a Regular Member of SIAM.

Join onsite at the registration desk, go to *www.siam.org/joinsiam* to join online or download an application form, or contact SIAM Customer Service:

Telephone: +1-215-382-9800 (worldwide); or 800-447-7426 (U.S. and Canada only)

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Standard Audio/Visual Set-Up in Meeting Rooms

SIAM does not provide computers for any speaker. When giving an electronic presentation, speakers must provide their own computers. SIAM is not responsible for the safety and security of speakers' computers.

The Plenary Session Room will have two (2) screens, one (1) data projector and one (1) overhead projector. The data projectors support VGA connections only. Presenters requiring an HDMI or alternate connection must provide their own adaptor.

All other concurrent/breakout rooms will have one (1) screen and one (1) data projector. The data projectors support VGA connections only. Presenters requiring an HDMI or alternate connection must provide their own adaptor.

If you have questions regarding availability of equipment in the meeting room of your presentation, please see a SIAM staff member at the registration desk.

Internet Access

The Sheraton Austin Hotel at the Capitol offers wireless Internet access to hotel guests in the lodging, Lobby Bar and the Link @Sheraton at no additional charge. Complimentary wireless Internet access in the meeting space is also available to SIAM attendees.

In addition, a limited number of computers with Internet access will be available during registration hours.

Registration Fee Includes

- Admission to all technical sessions
- SIAG/FME Business Meeting (open to SIAG/FME members)
- Coffee breaks daily
- Room set-ups and audio/visual equipment
- Welcome Reception and Poster Session

Job Postings

Please check with the SIAM registration desk regarding the availability of job postings or visit *http://jobs.siam.org.*

Important Notice to Poster Presenters

The poster session is scheduled for Thursday, November 17 from 6:30 PM – 8:30 PM. Poster presenters are expected to set up their poster material on the provided 4' x 8' poster boards in the Capitol View Terrace Room after 12:30 PM on Thursday, November 17. All materials must be posted by Thursday, November 17 at 6:30 PM, the official start time of the session. Posters must be removed by 11:00 AM on Saturday, November 19.

SIAM Books and Journals

Display copies of books and complimentary copies of journals are available on site. SIAM books are available at a discounted price during the conference. The books booth will be staffed on Thursday and Friday from 9:30 AM – 5:00 PM and Saturday 9:30 AM – 3:00 PM. If a SIAM books representative is temporarily away from the booth, completed order forms and payment (credit cards are preferred) may be taken to the SIAM registration desk. The books table will close at 3:00 PM on Saturday.

Table Top Displays

Cambridge University Press

Frontiers

Global Association of Risk Professionals

SIAM

Springer

World Scientific Publishers

Name Badges

A space for emergency contact information is provided on the back of your name badge. Help us help you in the event of an emergency!

Comments?

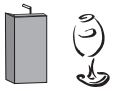
Comments about SIAM meetings are encouraged! Please send to:

Cynthia Phillips, SIAM Vice President for Programs (*vpp@siam.org*).

Get-togethers

- Welcome Reception and Poster Session
  Thursday, November 17
  6:30 PM – 8:30 PM

- SIAG/FME Business Meeting (open to SIAG/FME members)
  Friday, November 18
  5:45 PM – 6:30 PM
  Complimentary beer and wine will be served.



Statement on Inclusiveness

As a professional society, SIAM is committed to providing an inclusive climate that encourages the open expression and exchange of ideas, that is free from all forms of discrimination, harassment, and retaliation, and that is welcoming and comfortable to all members and to those who participate in its activities. In pursuit of that commitment, SIAM is dedicated to the philosophy of equality of opportunity and treatment for all participants regardless of gender, gender identity or expression, sexual orientation, race, color, national or ethnic origin, religion or religious belief, age, marital status, disabilities, veteran status, field of expertise, or any other reason not related to scientific merit. This philosophy extends from SIAM conferences, to its publications, and to its governing structures and bodies. We expect all members of SIAM and participants in SIAM activities to work towards this commitment.

Please Note

SIAM is not responsible for the safety and security of attendees' computers. Do not leave your laptop computers unattended. Please remember to turn off your cell phones, pagers, etc. during sessions.

Recording of Presentations

Audio and video recording of presentations at SIAM meetings is prohibited without the written permission of the presenter and SIAM.

Social Media

SIAM is promoting the use of social media, such as Facebook and Twitter, in order to enhance scientific discussion at its meetings and enable attendees to connect with each other prior to, during and after conferences. If you are tweeting about a conference, please use the designated hashtag to enable other attendees to keep up with the Twitter conversation and to allow better archiving of our conference discussions. The hashtag for FM16 is #SIAMFM16. SIAM's Twitter handle is @TheSIAMNews.

Invited Plenary Speakers

*** All Invited Plenary Presentations will take place in Capital Ballroom DE***

Thursday, November 17

11:00 AM – 11:45 AM

IP1 Algorithmic and High-Frequency Trading

Sebastian Jaimungal, *University of Toronto, Canada*

11:45 AM – 12:30 PM

IP2 Bubbles in Assets with Finite Life

José Scheinkman, *Columbia University, Princeton University and NBER, USA*

Friday, November 18

11:00 AM – 11:45 AM

IP3 Stochastic Calculus in Weak Formulation, with Applications

Jianfeng Zhang, *University of Southern California, USA*

11:45 AM – 12:30 PM

IP4 A Principal-Agent Model for Pricing Electricity Demand Volatility

Rene Aid, *EDF R&D and Université Paris-Dauphine, France*

2:15 PM – 3:00 PM

IP5 Causal Optimal Transport and its Links to Enlargement of Filtrations and Stochastic Optimization Problems

Beatrice Acciaio, *London School of Economics, United Kingdom*

Invited Plenary Speakers

*** All Invited Plenary Presentations will take place in Capital Ballroom DE****

Saturday, November 19

11:00 AM – 11:45 AM

IP6 Mathematical Models for Financial Asset Price Bubbles

Francesca Biagini, *Ludwig-Maximilians-Universität München, Germany*

11:45 AM – 12:30 PM

IP7 Systems of Backward Stochastic Differential Equations and Applications in Finance and Game Theory

Gordan Žitkovic, *University of Texas at Austin, USA*

1:45 PM – 2:30 PM

IP8 EM Algorithm and Stochastic Control

Steven Kou, *National University of Singapore, Singapore*

Minitutorials

Thursday, November 17
8:30 AM – 10:30 AM

MT1 Adjoint Methods for Computing Monte Carlo Greeks
Mike Giles, *University of Oxford, United Kingdom*
Capital Ballroom D

MT2 Ambit Stochastics with Applications to Commodity Markets
Almut Veraart, *Imperial College London, United Kingdom*
Capital Ballroom E

Prizes

*** All Prize Presentations will take place in Capital Ballroom DE****

Friday, November 18

12:30 PM – 2:00 PM

SIAG/FME Conference Paper Prize Session

Information not available at time of publication.

2:00 PM – 2:30 PM

SIAG/FME Early Career Prize Ceremony

SIAG/FME Early Career Prize Recipients

Matthew (Matt) Lorig, *University of Washington, USA*

Andreea C. Minca, *Cornell University, USA*

SIAM Activity Group on Financial Mathematics and Engineering(SIAG/FME)

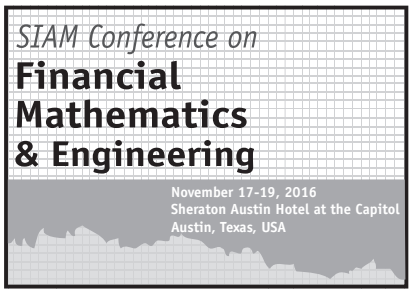
www.siam.org/activity/fme

A GREAT WAY TO GET INVOLVED!

Collaborate and interact with mathematical scientists, statisticians, computer scientists, computational scientists, and researchers and practitioners in finance and economics, to foster the use of mathematical and computational tools in quantitative finance in the public and private sector.

ACTIVITIES INCLUDE:

- Special sessions at SIAM Annual Meetings
- Biennial conference
- SIAG/FME Early Career Prize
- SIAG/FME Conference Paper Prize
- SIAM Presents features FM prize lecture, invited speakers, and select minisymposia online
- Wiki



BENEFITS OF SIAG/FME membership:

- Listing in the SIAG's online membership directory
- Additional discount on registration at the SIAM Conference on Financial Mathematics and Engineering) (excludes student)
- Electronic communications about recent developments in your specialty
- Eligibility for candidacy for SIAG/FME office
- Participation in the selection of SIAG/FME officers

ELIGIBILITY:

- Be a current SIAM member

COST:

- $15 per year
- Student members can join two activity groups for free!

2015-16 SIAG/FME OFFICERS

- Chair: Michael Ludkovski, University of California, Santa Barbara
- Vice Chair: Sebastian Jaimungal, University of Toronto
- Program Director: Tim Leung, University of Washington
- Secretary: Alex Schied, University of Mannheim

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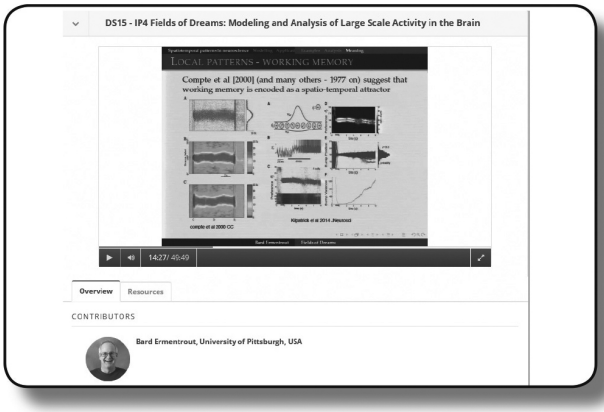
SIAM: *www.siam.org/joinsiam*



SIAM Presents is an audio-visual archive

comprised of more than 2,000 presentations posted in over 40 searchable topics, including:

- **algebraic geometry**
- **atmospheric and oceanographic science**
- **computational science**
- **data mining**
- **geophysical science**
- **optimization**
- **uncertainty quantification and more…**

The collection, *Featured Lectures from our Archives*, includes audio and slides from more than 30 conferences since 2008, including talks by invited and prize speakers, select minisymposia, and minitutorials. Presentations from SIAM meetings are being added throughout the year.

In addition you can view short video clips of speaker interviews from sessions at Annual Meetings starting in 2010.

Plans for adding more content are on the horizon. Keep an eye out!

The audio, slide, and video presentations are part of SIAM's outreach activities to increase the public's awareness of mathematics and computational science in the real world, and to bring attention to exciting and valuable work being done in the field. Funding from SIAM, the National Science Foundation, and the Department of Energy was used to partially support this project.

New presentations are posted every few months as the program expands with sessions from additional SIAM meetings. Users can search for presentations by category, speaker name, and/or key words.

www.siam.org/meetings/presents.php

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FM16 Program

SIAM Conference on

Financial Mathematics & Engineering

November 17-19, 2016
Sheraton Austin Hotel at the Capitol
Austin, Texas, USA

Wednesday, November 16

Registration

5:00 PM-7:00 PM

Room:Ballroom Prefunction

Thursday, November 17

Registration

7:30 AM-7:00 PM

Room:Ballroom Prefunction

MT1

Adjoint Methods for Computing Monte Carlo Greeks

8:30 AM-10:30 AM

Room:Capital Ballroom D

Chair: Mike Giles, University of Oxford, United Kingdom

Adjoint methods are a very efficient mathematical approach when one is interested in the sensitivity of a single output to changes in many inputs. They have been used for many years in engineering for optimal control and design optimisation. In 2006, Giles and Glasserman introduced the approach for Monte Carlo simulation of "Greeks" in computational finance, and it is now used widely within the finance industry.

This tutorial will introduce the key ideas of adjoint sensitivity analysis and the application to Monte Carlo simulation involving the approximation of an SDE for the underlying asset. Some key difficulties will be addressed, such as complex initialization procedures and discontinuous payoffs, and there will be an introduction to the ideas of Algorithmic Differentiation which can be very important for practical implementations. If there is time, there will be a brief discussion of the application to finite difference methods.

Speaker:

Mike Giles
University of Oxford, United Kingdom

Thursday, November 17

MT2

Ambit Stochastics with Applications to Commodity Markets

8:30 AM-10:30 AM

Room:Capital Ballroom E

Chair: Almut Veraart, Imperial College London, United Kingdom

Ambit stochastics is a new area of mathematical research tailored to modelling spatio-temporal phenomena in a wide range of applications. This minitutorial gives an introduction to this new field and discusses applications in financial mathematics. In particular, we are going to study how ambit fields and processes can be used to model energy spot and forward prices, and approaches to model estimation and derivative pricing within the ambit framework will be presented.

Speaker:

Imut Veraart
Imperial College London, United Kingdom

Coffee Break

10:30 AM-10:55 AM

Room:Ballroom Prefunction

Welcome Remarks

10:55 AM-11:00 AM

Room:Capital Ballroom DE

Thursday, November 17

IP1

Algorithmic and High-Frequency Trading

11:00 AM-11:45 AM

Room:Capital Ballroom DE

Chair: Tim Leung, University of Washington, USA

This talk will provide an overview of the state-of-the-art of algorithmic and high-frequency trading with an emphasis on stochastic control techniques. We will look at trading problems involving mean field games (arising when multiple agents are optimizing against one another), robust stochastic control (to account for model uncertainty), and partial information (when unobserved states modulate the system). The talk will highlight the interesting mathematical problems that arise and the financial intuition behind the results. [Various joint works with Álvaro Cartea, Philippe Casgrain, Ryan Donnelly, Bill Huang, and Mojtaba Nourin]

Sebastian Jaimungal
University of Toronto, Canada

Thursday, November 17

IP2

Bubbles in Assests with Finite Life

11:45 AM-12:30 PM

Room:Capital Ballroom DE

Chair: Thaleia Zariphopoulou, University of Texas at Austin, USA

We treat the speculative value of a nitely-lived asset when investors disagree and short sales are limited. When acquiring the asset, investors are willing to pay a speculative value for the resale option. Using martingale arguments, we characterize the equilibrium speculative value as a solution to a xed-point problem for a monotone operator. A Dynamic Programming Principle is used to show that the minimal solution to this problem is a viscosity solution of a (non-local) obstacle problem. This obstacle problem satises a comparison principle. Combining the monotonicity of the operator and the comparison principle we obtain several comparison of solution results. Underlying papers were coauthored with H. Berestycki, C. Bruggeman and R. Monneau.

José Scheinkman
Columbia University, Princeton University and NBER, USA

Lunch Break

12:30 PM-2:00 PM

Attendees on their own

Thursday, November 17

MS1

Machine Learning for Finance - Part I of III

2:00 PM-4:00 PM

Room:Capital Ballroom D

For Part 2 see MS9

Machine learning has had a significant impact on many areas of the sciences and engineering such as imaging, advertising, genetics, robotics, and speech recognition. This minisymposium discusses several important applications of machine learning in financial mathematics and engineering. Topics include mortgage risk, systematic trading via large- scale data mining, optimal stopping, foreign exchange trading, cross-sectional stock returns, volatility modeling, and limit order books. The talks explore a variety of machine learning approaches from deep learning, trees, semantic analysis, Gaussian process regression, low- rank/ sparse approximations, and other areas.

Organizer: Justin Sirignano
Imperial College London, United Kingdom and University of Illinois at Urbana-Champaign, USA

Organizer: Kay Giesecke
Stanford University, USA

2:00-2:25 Deep Learning for Limit Order Books
Justin Sirignano, Imperial College London, United Kingdom and University of Illinois at Urbana-Champaign, USA

2:30-2:55 Does Unusual News Forecast Market Stress?
Harry Mamaysky and *Paul Glasserman*, Columbia University, USA

3:00-3:25 Gaussian Process Metamodels for Optimal Stopping
Michael Ludkovski, University of California, Santa Barbara, USA

3:30-3:55 Heterogeneous Treatment Effects Estimation in Finance Via Tree-Based Models
Carlos Carvalho, University of Texas at Austin, USA

Thursday, November 17

MS2

Energy and Commodity Finance - Part I of IV

2:00 PM-4:00 PM

Room:Capital Ballroom A

For Part 2 see MS10

Energy and commodity markets have increased in size and importance over the last decades, while also facing many significant changes caused by factors such as global economic developments, regulatory changes, sustainability and environmental concerns. This has led to the growing need for new and advanced mathematical techniques to tackle complex interdisciplinary challenges. This symposium in Energy and Commodity Finance brings together practitioners and academics within the research areas of financial markets for oil, power, agricultural products and shipping. The talks range from practical hedging and risk management problems to theoretical mathematical models for prices and agent behavior.

Organizer: Nina Lange
University of Sussex, United Kingdom

Organizer: Michael Coulon
University of Sussex, United Kingdom

2:00-2:25 Risk Premia in Cash Settled Forwards
Jonas Lager, Skandinaviska Enskilda Banken, Sweden; *Nina Lange*, University of Sussex, United Kingdom; Nikos Nomikos, City University, London, United Kingdom

2:30-2:55 Optimal Switching in Competitive Models of the Corn Ethanol Market
Matt Davison, University of Western Ontario, Canada; Nicolas Merener, Universidad Torcuato Di Tella, Argentina

3:00-3:25 Vessel Price Formation and Second-Hand Market Activity in the Dry Bulk Shipping Industry
Nikos Nomikos, City University, London, United Kingdom

3:30-3:55 Understanding the Non-Convergence of Agricultural Futures Via Stochastic Storage Costs and Timing Options
Kevin Guo and Tim Leung, Columbia University, USA

Thursday, November 17

MS3

Optimal Stopping Problems in Mathematical Finance

2:00 PM-4:00 PM

Room:Capital Ballroom F

The theory of optimal stopping is important field of mathematical finance. Optimal stopping problems arise in a wide array of applications, including the pricing and exercising of American options, optimal asset selling, real options, sequential testing and quickest detection problems, and more. This minisymposium aims to present the recent theoretical results and new financial applications. The talks will discuss the following applications: 1) optimal double stopping theory with application to trading; 2) optimal stopping problems where underlying process is spectrally negative Lévy process; 3) commodity trading by multiple optimal stopping approach; 4) quickest change-point detection problems for multidimensional Wiener processes.

Organizer: Yerkin Kitapbayev
Boston University, USA

2:00-2:25 Optimal Spread Trading Problem
Yerkin Kitapbayev, Boston University, USA; Tim Leung, Columbia University, USA

2:30-2:55 Multiple Optimal Stopping Approach for Commodity Trading with Storage
Jan Palczewski, University of Leeds, United Kingdom

3:00-3:25 Optimal Stopping Problems with Random Time-horizon Under Spectrally Negative Lévy Models
Neofytos Rodosthenous, Queen Mary University of London, United Kingdom

3:30-3:55 Quickest Change-Point Detection Problems for Multidimensional Wiener Processes
Yavor Stoev, University of Michigan, USA

Thursday, November 17

MS4

CCPs: Theory and Practice - Part I of II

2:00 PM-4:00 PM

Room:Capital Ballroom G

For Part 2 see MS12

The 2009 G20 over-the-counter (OTC) derivatives program requires all standardized OTC derivatives to be cleared through central counterparties (CCPs). The focus of this minisymposium will be on derivatives CCPs -- the theoretical and practical aspects of their risk management and their impact on systemic risk and financial stability.

Organizer: Tomasz Bielecki
Illinois Institute of Technology, USA

Organizer: Igor Cialenco
Illinois Institute of Technology, USA

Organizer: Samim Ghamami
Office of Financial Research at the US Treasury and Center for Risk Management Research, UC Berkeley, USA

2:00-2:25 Does OTC Derivatives Reform Incentivize Central Clearing?
Samim Ghamami, Office of Financial Research at the US Treasury and Center for Risk Management Research, UC Berkeley, USA; Paul Glasserman, Columbia University, USA

2:30-2:55 Asset Values Dynamics Under Central Clearing
Allen Cheng, Columbia University, USA; Sriram Rajan, U.S. Department of the Treasury, USA

3:00-3:25 Central Clearing and OTC Exposures Reviewed: The Impact of Modelling Heterogeneity
Eric F. Schaanning, Imperial College of London, United Kingdom; Stephan Sturm, Worcester Polytechnic Institute, USA

3:30-3:55 Multivariate Shortfall Risk Allocation and Systemic Risk
Samuel Drapeau, Shanghai Jiao Tong University, China

Thursday, November 17

MS5

Robust, Model Free and Semiparametric Methods in Math Finance - Part I of III

2:00 PM-4:00 PM

Room:Capital Ballroom E

For Part 2 see MS13

Model uncertainty is a central problem in mathematical finance, where option prices, hedging strategies, and investment decision are highly sensitive to unknown parameters. The aim of robust, model free and semiparametric methods is to give pricing, hedging and investment results that either hold for a large class of models or are insensitive to model mis-specification. The aim of this minisymposium is to highlight recent developments in this line of research.

Organizer: Matthew Lorig
University of Washington, USA

2:00-2:25 Robust Replication of Barrier-Style Claims on Price and Volatility
Matthew Lorig, University of Washington, USA; Peter Carr, Courant Institute, New York University, USA; Roger Lee, University of Chicago, USA

2:30-2:55 Robust Framework for Pricing and Hedging in Discrete Time
Jan Obloj, Oxford University, United Kingdom

3:00-3:25 Some Extensions of Model-Independent Superhedging
Arash Fahim, Florida State University, USA; Yu-Jui Huang, University of Colorado Boulder, USA

3:30-3:55 Constrained Optimal Transport
Mete Soner, ETH Zürich, Switzerland

Thursday, November 17

MS6

Optimal Stochastic Control and Asset Allocation - Part I of II

2:00 PM-4:00 PM

Room:Capital Ballroom H

For Part 2 see MS14

This minisymposium (in two parts) will focus on optimal dynamic asset allocation, using recent advances in stochastic control. Objective functions include mean-variance (pre-committment and time consistent), mean safety-first, mean-CVAR, and target based, along with other possible criteria. Theoretical and empirical talks will be included. Computational techniques will include solution of HJB equations, and Monte Carlo and BSDE methods.

Organizer: Cornelis W. Oosterlee
Centrum voor Wiskunde en Informatica (CWI), Netherlands

Organizer: Peter Forsyth
University of Waterloo, Canada

2:00-2:25 Risk-Measure Derived Expected Utility Maximization in Dynamic Portfolio Selection
Duan Li, Chinese University of Hong Kong, Hong Kong

2:30-2:55 Equilibrium Strategies of a Continuous-Time Portfolio Selection Model under Rand-Dependent Utility
Xunyu Zhou, University of Oxford, United Kingdom

3:00-3:25 Volatility-Controlled Strategies for Asset Allocation
Artur Sepp, Julius Baer, Switzerland

3:30-3:55 Pre-Committment Mean Variance: How Robust Is It?
Peter Forsyth and Ken Vetzal, University of Waterloo, Canada

Thursday, November 17

MS7

Stochastic Portfolio Theory

2:00 PM-4:00 PM

Room:Capital Ballroom B

The scope of this minisymposium is to discuss recent developments, challenges and various aspects in the study of stochastic portfolio theory. Describing markets mathematically from observable characteristics, stochastic portfolio theory yields new mathematical problems and their solutions to portfolio rules and strategies. The objective of this symposium is to present the research directions in stochastic portfolio theory and related mathematics in theory as well as in practice.

Organizer: Tomoyuki Ichiba
University of California, Santa Barbara, USA

Organizer: Mykhaylo Shkolnikov
Princeton University, USA

2:00-2:25 Information Geometry of Volatility Harvesting
Leonard Wong, University of Washington, Seattle, USA

2:30-2:55 Super-replication with Delayed Information: From Discrete to Continuous-Time Models
Mostafa Mousavi, University of California, Santa Barbara, USA

3:00-3:25 Market Models with Splits and Mergers
Andrey Sarantsev, University of California, Santa Barbara, USA

3:30-3:55 Fluctuations of Diffusions Interacting Through the Ranks
Praveen Kolli, Carnegie Mellon University, USA

Thursday, November 17

MS8

Stochastic Control Theory with Applications to Finance

2:00 PM-4:00 PM

Room:Capital Ballroom C

In the past two decades, stochastic optimal control has been widely used in the analysis of decision making in the financial economics literature. Recent advances of financial mathematics extend the investigation to more complex and realistic models, with a focus on transaction costs, liquidity, and interactions of agents in game/ equilibrium settings, and call for further methodological developments in stochastic control theory. The goal of this minisymposium is to bring together a diverse group of experts to discuss current problems and future perspectives of stochastic control theory in finance, with contributions in both modeling and methodology.

Organizer: Ruoting Gong
Illinois Institute of Technology, USA

Organizer: Gu Wang
Worcester Polytechnic Institute, USA

2:00-2:25 Mean Field Games for Strategic Servers
Asaf Cohen and Erhan Bayraktar, University of Michigan, USA; Amarjit Budhiraja, University of North Carolina at Chapel Hill, USA

2:30-2:55 Optimal Investment in a Dual Risk Model
Lingjiong Zhu, Florida State University, USA

3:00-3:25 Optimal Investment in Hedge Funds Under Loss Aversion
Bin Zou, University of Alberta, Canada

3:30-3:55 Time Discretization and Mixing in Zero-Sum Games and Problems of Model Uncertainty
Mihai Sirbu, University of Texas at Austin, USA

Coffee Break

4:00 PM-4:30 PM

Room:Ballroom Prefunction

Thursday, November 17

MS9

Machine Learning for Finance - Part II of III

4:30 PM-6:30 PM

Room:Capital Ballroom D

For Part 1 see MS1
For Part 3 see MS17

Machine learning has had a significant impact on many areas of the sciences and engineering such as imaging, advertising, genetics, robotics, and speech recognition. This minisymposium discusses several important applications of machine learning in financial mathematics and engineering. Topics include mortgage risk, systematic trading via large- scale data mining, optimal stopping, foreign exchange trading, cross-sectional stock returns, volatility modeling, and limit order books. The talks explore a variety of machine learning approaches from deep learning, trees, semantic analysis, Gaussian process regression, low- rank/ sparse approximations, and other areas.

Organizer: Justin Sirignano
Imperial College London, United Kingdom and University of Illinois at Urbana-Champaign, USA

Organizer: Kay Giesecke
Stanford University, USA

4:30-4:55 Joint Prediction of House Prices and Mortgage Risk
Kay Giesecke, Michael Ohlrogge, and Yexiang Wei, Stanford University, USA

5:00-5:25 Background Subtraction for Pattern Recognition in High Frequency Financial Data
Alex Papanicolaou, Stanford University, USA

5:30-5:55 Deep Autoregressive Networks for Economic Regime Dependent Asset Allocation
Jack Kim, Data Capital Management, USA

6:00-6:25 Sparse Signals in the Cross-Section of Returns
Adam Clark-Joseph, Mao Ye, and Alex Chinco, University of Illinois at Urbana-Champaign, USA

Thursday, November 17

MS10

Energy and Commodity Finance - Part II of IV

4:30 PM-6:30 PM

Room:Capital Ballroom A

For Part 1 see MS2
For Part 3 see MS18

Energy and commodity markets have increased in size and importance over the last decades, while also facing many significant changes caused by factors such as global economic developments, regulatory changes, sustainability and environmental concerns. This has led to the growing need for new and advanced mathematical techniques to tackle complex interdisciplinary challenges. This symposium in Energy and Commodity Finance brings together practitioners and academics within the research areas of financial markets for oil, power, agricultural products and shipping. The talks range from practical hedging and risk management problems to theoretical mathematical models for prices and agent behavior.

Organizer: Nina Lange
University of Sussex, United Kingdom

Organizer: Michael Coulon
University of Sussex, United Kingdom

4:30-4:55 Polynomial Processes and Power Prices
Antony Ware, University of Calgary, Canada; Damir Filipovic, École polytechnique fédérale de Lausanne, Switzerland; Martin Larsson, Cornell University, USA

5:00-5:25 Model Risk in Gas Storage Valuation: Joint Calibration-Estimation Risk Measurement
Mark Cummins, Dublin City University, Ireland

5:30-5:55 Trawl Processes in Finance
Almut Veraat, Imperial College London, United Kingdom

6:00-6:25 A Partly Sunny, Partly Windy Forecast
Davis Edwards, Deloitte, USA

Thursday, November 17

MS11

Asymptotic Techniques in Financial Mathematics

4:30 PM-6:30 PM

Room:Capital Ballroom F

Asymptotic techniques have been applied to a wide variety of problems in financial mathematics ranging from pricing derivatives to evaluating systemic risk. These techniques typically result in closed-form or variational formulas that approximate solutions to problems that are otherwise intractable. This minisymposium will showcase some of the asymptotic techniques being used in financial mathematics and will include talks on small-time asymptotics of stochastic volatility models, large deviations in the study of systemic risk and mean-field games that approximate games with a large number of players.

Organizer: Rohini Kumar
Wayne State University, USA

4:30-4:55 Randomised Stochastic Volatility Models
Antoine Jacquier, Imperial College London, United Kingdom

5:00-5:25 Analytical Approximations for McKean-Vlasov Diffusions
Stefano Pagliarani, Ecole Polytechnique, France

5:30-5:55 Rare Events and Defualt Clustering of Large Financial Networks
Konstantinos Spiliopoulos, Boston University, USA

6:00-6:25 Quantifying Mean Field Approximations for Large Games
Daniel Lacker and Kavita Ramanan, Brown University, USA

Thursday, November 17

MS12

CCPs: Theory and Practice - Part II of II

4:30 PM-6:30 PM

Room:Capital Ballroom G

For Part 1 see MS4
The 2009 G20 over-the-counter (OTC) derivatives program requires all standardized OTC derivatives to be cleared through central counterparties (CCPs). The focus of this minisymposium will be on derivatives CCPs -- the theoretical and practical aspects of their risk management and their impact on systemic risk and financial stability.

Organizer: Tomasz Bielecki
Illinois Institute of Technology, USA

Organizer: Igor Cialenco
Illinois Institute of Technology, USA

Organizer: Samim Ghamami
Office of Financial Research at the US Treasury and Center for Risk Management Research, UC Berkeley, USA

4:30-4:55 Dynamic Model of Central Counterparty Risk
Igor Cialenco, Illinois Institute of Technology, USA

5:00-5:25 Stochastic Intensity Margin Modeling of Credit Default Swap Portfolios
Baeho Kim, Korea University Business School, South Korea; Dong Hwan Oh, Board of Governors of the Federal Reserve System, USA; Samim Ghamami, Office of Financial Research at the US Treasury and Center for Risk Management Research, UC Berkeley, USA

5:30-5:55 Persistence and Procyclicality In Margin Requirements
Qi Wu, Chinese University of Hong Kong, Hong Kong; Paul Glasserman, Columbia University, USA

6:00-6:25 Ice Cds Risk Management Methodology
Ismail Iyigunler, Intercontinental Exchange Inc., USA

Thursday, November 17

MS13

Robust, Model Free and Semiparametric Methods in Math Finance - Part II of III

4:30 PM-6:30 PM

Room:Capital Ballroom E

For Part 1 see MS5
For Part 3 see MS21
Model uncertainty is a central problem in mathematical finance, where option prices, hedging strategies, and investment decision are highly sensitive to unknown parameters. The aim of robust, model free and semiparametric methods is to give pricing, hedging and investment results that either hold for a large class of models or are insensitive to model mis-specification. The aim of this minisymposium is to highlight recent developments in this line of research.

Organizer: Matthew Lorig
University of Washington, USA

4:30-4:55 Distribution-Constrained Optimal Stopping
Erhan Bayraktar, University of Michigan, USA; Christopher W. Miller, University of California, Berkeley, USA

5:00-5:25 Super-Replication in Extremely Incomplete Markets
Yan Dolinsky, Hebrew University of Jerusalem, Israel

5:30-5:55 Variance Swaps on Time-Changed Markov Processes
Roger Lee, University of Chicago, USA; Peter Carr, Courant Institute, New York University, USA; Matthew Lorig, University of Washington, USA

6:00-6:25 Level, Slope, and Curvature Trading in Yields and Volatilities
Peter Carr, Courant Institute, New York University, USA

Thursday, November 17

MS14

Optimal Stochastic Control and Asset Allocation - Part II of II

4:30 PM-6:30 PM

Room:Capital Ballroom H

For Part 1 see MS6

This minisymposium (in two parts) will focus on optimal dynamic asset allocation, using recent advances in stochastic control. Objective functions include mean-variance (pre-committment and time consistent), mean safety-first, mean-CVAR, and target based, along with other possible criteria. Theoretical and empirical talks will be included. Computational techniques will include solution of HJB equations, and Monte Carlo and BSDE methods.

Organizer: Cornelis W. Oosterlee

Centrum voor Wiskunde en Informatica (CWI), Netherlands

Organizer: Peter Forsyth

University of Waterloo, Canada

4:30-4:55 Efficient Numerical Methods and Comparisons for Pre-Commitment and Time-Consistent Mean-Variance Asset Allocation

Cornelis W. Oosterlee, Centrum voor Wiskunde en Informatica (CWI), Netherlands

5:00-5:25 Optimal Mean-Variance Portfolio Allocation: a Hamilton-Jacobi-Bellman Pde Approach

Duy-Minh Dang, University of Queensland, Australia

5:30-5:55 On Time Consistency for Mean-variance Portfolio Selection

Elena Vigna, Universita di Torino, Italy

6:00-6:25 Optimal Control of Conditional Value-at-Risk in Continuous Time

Christopher W. Miller, University of California, Berkeley, USA; Insoon Yang, Massachusetts Institute of Technology, USA

Thursday, November 17

MS15

Behavioral Finance and Economics

4:30 PM-6:30 PM

Room:Capital Ballroom B

Behavioral finance and economics is a field in which agents are not assumed to be rational, i.e., in which agents can be subject to framing effects, can make non-Bayesian inference and prediction, and can have non-EUT preferences. In this minisymposium, we present recent developments in this area, such as a realization utility model for stock trading, a casino gambling model in which a gambler with non-EUT preferences optimally decides when to exit from a casino, the design of a competition scheme to mitigate the loss of social welfare due to time inconsistency preferences, and predication of the Chinese stock market using investor sentiment.

Organizer: Xuedong He

Columbia University, USA

4:30-4:55 Realization Utility with Adaptive Reference Points

Xuedong He, Columbia University, USA

5:00-5:25 Optimal Stopping Strategies of A Behavioral Gambler in Finite Time Horizon

Sang Hu, National University of Singapore, Singapore

5:30-5:55 Resolving Time Inconsistency Through a Competition Scheme

Xiangyu Cui, Shandong University, China; Yun Shi, Shanghai University, China

6:00-6:25 Long-Term Growth Rate of Expected Utility for Leveraged ETFs

Hyungbin Park, Worcester Polytechnic Institute, USA

Thursday, November 17

MS16

Stochastic Control and Portfolio Optimization

4:30 PM-6:30 PM

Room:Capital Ballroom C

One of the classical and central areas of mathematical finance is portfolio optimization. Development of this field is intimately related to advancements in stochastic control theory. In this symposium, four speakers will discuss the following core subareas of portfolio optimization, namely: asymptotic expansions of the value function and the optimizer of a utility maximization problem (Oleksii Mostovyi), large deviations in optimal investment (Konstantinos Spiliopoulos), the impacts of transaction costs (Xiang Yu), optimal execution of a volume-weighted average (VWAP) price order (Christoph Frei). From the geographical point of view, the speakers represent 3 countries: US, China (Hong Kong), and Canada.

Organizer: Oleksii Mostovyi

University of Connecticut, USA

4:30-4:55 A Second-Order Expansion of the Value Function in the Problem of Optimal Investment in Incomplete Markets

Oleksii Mostovyi, University of Connecticut, USA

5:00-5:25 Systemic Influences on Optimal Equity-Credit Investment

Christoph Frei, University of Alberta, Canada; Agostino Capponi, Columbia University, USA

5:30-5:55 Optimal Investment with Transaction Costs Under Cumulative Prospect Theory in Discrete Time

Bin Zou, Technische Universitaet Muenchen, Germany

6:00-6:25 Optimization Problem for a Portfolio with an Illiquid Asset: Lie Group Analysis

Ivan Yamshchikov, Brandenburg University of Technology, Germany

Thursday, November 17

PP1

Welcome Reception and Poster Session

6:30 PM-8:30 PM

Room:Capitol View Terrace

Weakly Chained Matrices, Policy Iteration, and Impulse Control
Parsiad Azimzadeh and Peter Forsyth, University of Waterloo, Canada

Portfolio Analysis by Graph Similarity Function
Greeshma Balabhadra, Indian Institute of Technology, Guwahati, India

Impact of Contingent Payments on Systemic Risks in Financial Networks
Tathagata Banerjee and Zachary Feinstein, Washington University, St. Louis, USA

A New Finite Difference Method for Pricing and Hedging Fixed Income Derivatives: Comparative Analysis and the Case of An Asian Option
Allan J. Da Silva and Jack Baczynski, National Laboratory for Scientific Computing, Brazil; José V.M. Vicente, Ibmec Business School, Brazil

Quantization Meets Fourier: A New Approach for Pricing with Stochastic Volatility
Lucio Fiorin, Giorgia Callegaro, and Martino Grasselli, University of Padova, Italy

Hybrid Finite Difference / Pseudospectral Methods for Stochastic Volatility Models
Christian Hendricks and Matthias Ehrhardt, Universität Wuppertal, Germany; Michael Günther, Bergische Universität, Germany

Saddlepoint Methods for Risk Sensitivities and Markovian Projection
Sojung Kim and Kyoung-Kuk Kim, Korea Advanced Institute of Science and Technology, Korea

Optimal Pairs Trading with Time-Varying Volatility
Thomas N. Li, New York University, USA

Radial Basis Function Generated Finite Differences for Basket Option Pricing
Slobodan Milovanovic and Lina von Sydow, Uppsala University, Sweden

Term Structure of Default Swap Rates for a Legal Entity with Perpetual Debt and Jumpy Assets
Nan Ma, University of Minneapolis, USA; *Shen Wang*, University of Minnesota, USA

Path-differentiability of BSDE Driven by a Continuous Martingale
Kihun Nam, Rutgers University, USA

Optimal Order Execution Across Multi-Platform
Amirhossein Sadoghi, Frankfurt School of Finance and Management, Germany and Linköping University, Sweden

An Efficient Meshfree Approach to Pricing Financial Contracts
Victor Shcherbakov, Uppsala University, Sweden

Quanto Pricing in Stochastic Correlation Models
Long Teng, University of Wuppertal, Germany; Matthias Ehrhardt, Universität Wuppertal, Germany; Michael Guenther, Bergische Universität Wuppertal, Germany

Controlled Markov Decision Processes with AVaR Criteria for Unbounded Costs
Kerem Ugurlu, University of Southern California, USA

Optimal Liquidation Strategy Across Multiple Exchanges under a Jump-Diffusion Fast Mean-Reverting Model
Qingqing Yang and Wai-Ki Ching, University of Hong Kong, China; Jia-Wen Gu, University of Copenhagen, Denmark; Tak-Kuen Siu, Macquarie University, Sydney, Australia

On Construction of Smooth Market in Models with Transaction Costs
Daisuke Yoshikawa, Hokkai-Gakuen University, Japan; Akira Yamazaki, Hosei University, Japan

continued in next column

Friday, November 18

Registration

8:00 AM-4:00 PM

Room:Ballroom Prefunction

MS17

Machine Learning for Finance - Part III of III

8:30 AM-10:30 AM

Room:Capital Ballroom D

For Part 2 see MS9

Machine learning has had a significant impact on many areas of the sciences and engineering such as imaging, advertising, genetics, robotics, and speech recognition. This minisymposium discusses several important applications of machine learning in financial mathematics and engineering. Topics include mortgage risk, systematic trading via large- scale data mining, optimal stopping, foreign exchange trading, cross- sectional stock returns, volatility modeling, and limit order books. The talks explore a variety of machine learning approaches from deep learning, trees, semantic analysis, Gaussian process regression, low- rank/sparse approximations, and other areas.

Organizer: Justin Sirignano
Imperial College London, United Kingdom and University of Illinois at Urbana-Champaign, USA

Organizer: Kay Giesecke
Stanford University, USA

8:30-8:55 Modeling Path Dependent Mortgage Prepayment using Recurrent Neural Networks
Apaar Sadhwani, Stanford University, USA

continued on next page

Friday, November 18

MS17

Machine Learning for Finance - Part III of III

8:30 AM-10:30 AM

continued

9:00-9:25 Algorithmic Trade Execution and Market Dynamics
Rama Cont, Imperial College, United Kingdom

9:30-9:55 A Deep Neural Network based Trade Recommendation Engine
Matthew F. Dixon, University of California, Davis, USA

10:00-10:25 Do U.S. Financial Regulators Listen to the Public? Testing the Regulatory Process with the RegRank Algorithm
Andrei Kirilenko, Imperial College of London, United Kingdom

Friday, November 18

MS18

Energy and Commodity Finance - Part III of IV

8:30 AM-10:30 AM

Room:Capital Ballroom A

For Part 2 see MS10
For Part 4 see MS26

Energy and commodity markets have increased in size and importance over the last decades, while also facing many significant changes caused by factors such as global economic developments, regulatory changes, sustainability and environmental concerns. This has led to the growing need for new and advanced mathematical techniques to tackle complex interdisciplinary challenges. This symposium in Energy and Commodity Finance brings together practitioners and academics within the research areas of financial markets for oil, power, agricultural products and shipping. The talks range from practical hedging and risk management problems to theoretical mathematical models for prices and agent behavior.

Organizer: Nina Lange
University of Sussex, United Kingdom

Organizer: Michael Coulon
University of Sussex, United Kingdom

8:30-8:55 Spread Option Prices, Strike Conventions and Implied Correlation
Michael Coulon, University of Sussex, United Kingdom; Elisa Alos, Universitat Pompeu Fabra

9:00-9:25 How Good Are "Natural" Hedges?
Glen Swindle, Scoville Risk Partners, USA

9:30-9:55 Structural Estimation of Switching Options
Stein-Erik Fleten, Norwegian University of Science and Technology, Norway; Erik Haugom, Lillehammer University College, Norway; Carl Ullrich, James Madison University, USA; Alois Pichler, Norwegian University of Science and Technology, Austria and University of Vienna,

10:00-10:25 Portfolio Risk: A Retailer's Perspective
Anthony Holmes, NRG, USA

Friday, November 18

MS19

High-Frequency Financial Statistics

8:30 AM-10:30 AM

Room:Capital Ballroom F

The availability of financial data recorded at high frequencies has inspired a new research area that currently belongs to the most active fields in statistics. A major focus is the estimation of asset return covariances that efficiently exploit high-frequency information while accounting for jumps and market microstructure effects. In this symposium we decompose the covariation of returns and volatility, the so-called leverage effect, into a continuous and jump component. We revisit the question of the smoothness of the volatility process, present an integrated theory of long-horizon ARMA models with high-frequency statistics and estimate time-varying high-dimensional factor models with high-frequency data.

Organizer: Markus Pelger
Stanford University, USA

8:30-8:55 Large-Dimensional High-Frequency Factor Analysis
Markus Pelger, Stanford University, USA

9:00-9:25 Estimation of the Continuous and Discontinuous Leverage Effects
Yacine Ait-Sahalia and Jianqing Fan, Princeton University, USA; Roger Laeven, University of Amsterdam, Netherlands; Christina Dan Wang, Columbia University, USA; *Xiye Yang*, Rutgers University, USA

9:30-9:55 When Arma Meets High Frequency Data: An Integrated Theory
Rui Da and *Dacheng Xiu*, University of Chicago, USA

10:00-10:25 "Exchange-Traded Funds and Related Strategies
Tim Leung, Columbia University, USA

Friday, November 18

MS20

Network Models for Systemic Risk

8:30 AM-10:30 AM

Room:Capital Ballroom G

Systemic risk is of paramount importance to study and understand due to the tremendous costs, both direct in government intervention and indirect to the domestic and global economy, exhibited in the 2007-2009 financial crisis and subsequent credit crunch. Much of the current research falls under the heading of either financial contagion models or measuring risk. In this minisymposium we would focus on those models based on financial networks, considering problems such as model dynamics, calibration, and sensitivity analysis.

Organizer: Zachary Feinstein
Washington University, St. Louis, USA

Organizer: Hamed Amini
University of Miami, USA

8:30-8:55 Default Cascades in Inhomogeneous Financial Networks
Hamed Amini, University of Miami, USA

9:00-9:25 Sensitivity of the Eisenberg-Noe Network Model to the Relative Liabilities
Zach Feinstein, Washington University, St. Louis, USA; Weijie Pang, Worcester Polytechnic Institute, USA; Birgit Rudloff, Wirtschafts University Vienna, Austria; Eric F. Schaanning, Imperial College of London, United Kingdom; Stephan Sturm, Worcester Polytechnic Institute, USA; *Mackenzie Wildman*, Lehigh University, USA

9:30-9:55 Systemic Risk under Heterogeneous Beliefs
Benjamin Bernard and Agostino Capponi, Columbia University, USA

10:00-10:25 Systemic Risk and Central Clearing Counterparty Design
Andreea Minca, Cornell University, USA

Friday, November 18

MS21

Robust, Model Free and Semiparametric Methods in Math Finance - Part III of III

8:30 AM-10:30 AM

Room:Capital Ballroom E

For Part 2 see MS13

Model uncertainty is a central problem in mathematical finance, where option prices, hedging strategies, and investment decision are highly sensitive to unknown parameters. The aim of robust, model free and semiparametric methods is to give pricing, hedging and investment results that either hold for a large class of models or are insensitive to model mis-specification. The purpose of this minisymposium is to highlight recent developments in this line of research.

Organizer: Matthew Lorig
University of Washington, USA

8:30-8:55 Hedging with Small Uncertainty Aversion
Sebastian Herrmann, ETH Zürich, Switzerland; *Johannes Muhle-Karbe*, University of Michigan, USA; Frank Seifried, University of Trier, Germany

9:00-9:25 Model Uncertainty, Recalibration, and the Emergence of Delta-Vega Hedging
Sebastian Herrmann, ETH Zürich, Switzerland; Johannes Muhle-Karbe, University of Michigan, USA

9:30-9:55 High-Roller Impact: A Large Generalized Game Model of Parimutuel Wagering
Alexander Munk and Erhan Bayraktar, University of Michigan, USA

10:00-10:25 Arbitrage in Non-dominated Markets with Frictions
Yuchong Zhang, Columbia University, USA; Erhan Bayraktar, University of Michigan, USA

Friday, November 18

MS22

Models and Strategies for Investment and Insurance

8:30 AM-10:30 AM

Room:Capital Ballroom H

For studying investment and insurance problems suitable models for involved assets and risks are needed. Based on these typically stochastic models optimization problems can be formulated for optimal strategies in terms of cost, reward, or risk. Various techniques have been developed to solve these optimization problems. Usually they rely on the discretization and solution of the underlying stochastic model or its deterministic counterpart. This minisymposium studies all the above aspects of investment and insurance problems. Considered applications include asset allocation and mortgage refinancing strategies.

Organizer: Jari Toivanen
Stanford University, USA

8:30-8:55 Mean Variance Asset Allocation under Mean Reverting Growth Rate
Jari Toivanen, Stanford University, USA

9:00-9:25 Mortgage Refinancing Strategies
Zhijian Wu and Jin Zheng, University of Nevada, Las Vegas, USA

9:30-9:55 Optimal Reinsurance and Investment Strategies under the Effect of Inside Information: Stochastic Differential Game Formulation
Fanyi Peng, Ming Yan, and *Shuhua Zhang*, Tianjin University of Finance and Economics, China

10:00-10:25 Approximation of the Value of Contracts in Insurance Liabilities using Radial Basis Functions
Stefan Singor, Ortec Finance and Delft University of Technology, Netherlands; Eric Schols, Ortec-Finance, United Kingdom; Kees Oosterlee, CWI, Amsterdam, Netherlands

Friday, November 18

MS23

Multivariate Risk and Preferences

8:30 AM-10:30 AM

Room:Capital Ballroom B

Risk measures for random vectors have been studied in the financial mathematics literature during the last decade. While their original motivation was to quantify risk in multi-asset markets with transaction costs, they have recently been studied in other naturally multivariate contexts where risk is of interest. This minisyposium aims to present an overview of the recent advances in the theory of multivariate risk measures and the related incomplete preferences as well as their applications in systemic risk, stochastic programming and indifference pricing.

Organizer: Cagin Ararat
Bilkent University, Turkey

8:30-8:55 Scalarizations of Set-Valued Risk Measures
Zachary Feinstein, Washington University, St. Louis, USA; Birgit Rudloff, Wirtschafts University Vienna, Austria

9:00-9:25 Dynamic Systemic Risk Measures
Ludger Overbeck and Katrin Zilch, University of Giessen, Germany; Eduard Kromer, University of California, Berkeley, USA

9:30-9:55 Utility Indifference Pricing for Incomplete Preferences Via Convex Vector Optimization
Firdevs Ulus, Bilkent University, Turkey

10:00-10:25 Risk-Averse Multi-Objective Two-Stage Stochastic Programming
Cagin Ararat and Ozlem Cavus, Bilkent University, Turkey

Friday, November 18

MS24

Stochastic Control and Stopping under Time Inconsistency

8:30 AM-10:30 AM

Room:Capital Ballroom C

Time-inconsistent dynamic optimization arises with various financial and economic motivations, such as non-exponential discounting, state-dependent (or horizon-dependent) risk aversion, and probability weighting. These problems cannot be solved by finding optimal strategies via dynamic programming (or, Bellman's optimality principle). Instead, one needs to employ subgame perfect Nash equilibrium strategies to resolve time inconsistency. This minisymposium presents latest developments in resolving time-inconsistent problems of control and stopping. New mathematical tools and economic formulations will be introduced, with applications to asset pricing, utility maximization, and real option valuation.

Organizer: Yu-Jui Huang
University of Colorado Boulder, USA

Organizer: Adrien Nguyen-Huu
Université Montpellier II, France

8:30-8:55 Dynamic Approaches for Some Time Inconsistent Problems
Chandrasekhar Karnam, *Jin Ma*, and Jianfeng Zhang, University of Southern California, USA

9:00-9:25 Never, Ever Getting Started: On Prospect Theory Without Commitment
Philipp Strack, University of California, Berkeley, USA

9:30-9:55 On Time Inconsistent Control and Equilibrium Theory
Mariana Khapko, University of Toronto, Canada

10:00-10:25 Time-Consistent Stopping
Yu-Jui Huang, University of Colorado Boulder, USA; *Adrien Nguyen-Huu*, Université Montpellier II, France; Xunyu Zhou, University of Oxford, United Kingdom

Friday, November 18

Coffee Break

10:30 AM-10:55 AM

Room:Ballroom Prefunction

Remarks

10:55 AM-11:00 AM

Room:Capital Ballroom DE

IP3

Stochastic Calculus in Weak Formulation, with Applications

11:00 AM-11:45 AM

Room:Capital Ballroom DE

Chair: Mete Soner, ETH Zürich, Switzerland

While it is widely used in economics literature, the weak formulation has received less attention than the standard strong formulation in stochastic community. In this talk, we will first motivate the weak formulation by several examples from economics/finance as well as stochastic controls/games. We then discuss nonlinear expectation and path dependent PDEs, which are by nature built upon weak formulation.

Jianfeng Zhang
University of Southern California, USA

Friday, November 18

IP4

A Principal-Agent Model for Pricing Electricity Demand Volatility

11:45 AM-12:30 PM

Room:Capital Ballroom DE

Chair: Alvaro Cartea, University of Oxford, United Kingdom

The development of renewable energy sources for electricity generation in the electric systems are renewed the interest for demand response programs. Indeed, the volatility of renewable energies compels systems operator and electric utilities to increase their storage capacity to be able to cope with these important variations over small time steps. Instead of using a physical storage solution, we propose a model of demand pricing that allow a producer to incite a consumer to smooth her consumption over time. We use a Principal-Agent framework where the agent's consumption volatility is controlled, find the optimal contract and show with numerical illustrations how the agent's consumption volatility is reduced.

Rene Aid
EDF R&D and Université Paris-Dauphine, France

Friday, November 18

SIAG/FME Conference Paper Prize Session

12:30 PM-2:00 PM

Room:Capital Ballroom DE

Lunch Break

12:30 PM-2:00 PM

Attendees on their own

Editorial Board Meeting Financial Books Series

12:45 PM-1:45 PM

Room: George Bonnell-4th Floor

SIAG/FME Early Career Prize Ceremony

2:00 PM-2:15 PM

Room:Capital Ballroom DE

Friday, November 18

IP5

Causal Optimal Transport and its Links to Enlargement of Filtrations and Stochastic Optimization Problems

2:15 PM-3:00 PM

Room:Capital Ballroom DE

Chair: Jan Obloj, Oxford University, United Kingdom

The martingale part in the semimartingale decomposition of a Brownian motion, with respect to an enlarged filtration, is an anticipative mapping of said Brownian motion. In analogy to optimal transport theory, I will define causal transport plans in the context of enlargement of filtrations, as the Kantorovich counterparts of the aforementioned non-adapted mappings. I will present a necessary and sufficient condition for a Brownian motion to remain a semimartingale in an enlarged filtration, in terms of certain minimization problems over sets of causal transport plans. The latter will be also used in order to give an estimate of the value of having additional information, for some classical stochastic optimization problems. This talk is based on a joint work with Julio Backhoff and Anastasiia Zalashko.

Beatrice Acciaio
London School of Economics, United Kingdom

Coffee Break

3:00 PM-3:30 PM

Room:Ballroom Prefunction

Friday, November 18

MS25

Algorithmic and High-Frequency Trading - Part I of II

3:30 PM-5:30 PM

Room:Capital Ballroom D

For Part 2 see MS31

In modern electronic markets nearly all trading is executed using an algorithm. The arms race is now on hardware and the trading algorithms that run on them. A great deal of these algorithms rely on sophisticated mathematical models. This mini symposium brings together some of the cutting edge research papers which explore different topics including: optimal execution, adverse selection, Hawkes-based models, market making, portfolio execution, trading with information, market micro-structure, foreign exchange trading.

Organizer: Alvaro Cartea
University of Oxford, United Kingdom

3:30-3:55 Extension and Calibration of a Hawkes-Based Optimal Execution Model
Aurelien Alfonsi, CERMICS, Ecole Nationale des Ponts et Chaussees, France

4:00-4:25 A Pure-Jump Market-Making Model for High-Frequency Trading, with Numerics
Frederi Viens, Purdue University, USA

4:30-4:55 Liquidating Baskets of Co-Moving Assets
Luke Gan, University of Toronto, Canada

5:00-5:25 Rough Volatility and Leverage Effect: From High Frequency Foundations to Smile
Mathieu Rosenbaum, CMAP, Ecole Polytechnique, France

Friday, November 18

MS26

Energy and Commodity Finance - Part IV of IV

3:30 PM-5:30 PM

Room:Capital Ballroom A

For Part 3 see MS18

Energy and commodity markets have increased in size and importance over the last decades, while also facing many significant changes caused by factors such as global economic developments, regulatory changes, sustainability and environmental concerns. This has led to the growing need for new and advanced mathematical techniques to tackle complex interdisciplinary challenges. This symposium in Energy and Commodity Finance brings together practitioners and academics within the research areas of financial markets for oil, power, agricultural products and shipping. The talks range from practical hedging and risk management problems to theoretical mathematical models for prices and agent behavior.

Organizer: Nina Lange
University of Sussex, United Kingdom

Organizer: Michael Coulon
University of Sussex, United Kingdom

3:30-3:55 Energy Prices & Dynamic Games with Stochastic Demand
Ronnie Sircar, Princeton University, USA

4:00-4:25 Commodity Market Financialization, Indexation, and Correlation
Craig Pirrong, University of Houston, USA

4:30-4:55 Risk and Expected Return in the Oil-Futures Market
Ehud Ronn, University of Texas at Austin, USA

5:00-5:25 Planning and Operation of a Large US Onshore Oil and Gas Portfolio; Problems and Experiences
Johan Sollie, Statoil, Norway

Friday, November 18

MS27

Optimal Investment With Transaction Cost

3:30 PM-5:30 PM

Room:Capital Ballroom F

The problem of Optimal Investment is fundamental in Mathematical Finance, and frictions make the underlying market model more realistic. One of the most fundamental frictions in the market are transaction costs. In this session, we will present recent developments in optimal investment with various types of transaction costs. Particular emphasis is placed on considering both fixed and proportional transaction costs, mean reverting stochastic volatility, elegant no arbitrage conditions in the market and agent with recursive utility.

Organizer: Arash Fahim
Florida State University, USA

Organizer: Maxim Bichuch
Johns Hopkins University, USA

3:30-3:55 Optimal Investment with Transaction Costs and Stochastic Volatility
Maxim Bichuch, Johns Hopkins University, USA; Ronnie Sircar, Princeton University, USA

4:00-4:25 Asymptotic Methods for Transaction Costs
Mete Soner and *Max Reppen*, ETH Zürich, Switzerland

4:30-4:55 On the Market Viability under Proportional Transaction Costs
Xiang Yu, Hong Kong Polytechnic University, China; Erhan Bayraktar, University of Michigan, USA

5:00-5:25 Portfolio Optimization with Recursive Utility under Small Transaction Costs
Yaroslav Melnyk, École Polytechnique Fédérale de Lausanne, Switzerland; Johannes Muhle-Karbe, University of Michigan, USA; Frank Thomas Seifried, University of Trier, Germany

Friday, November 18

MS28

Robust Investment Management

3:30 PM-5:30 PM

Room:Capital Ballroom E

Institutional investors, such as money market funds, pension funds, broker dealers and insurance companies, actively manage their portfolio so to maximize a desired measure of performance. The portfolio framework, however, rely on models of asset price dynamics whose probabilistic behavior is imprecisely known. The situation is even worse if the set of portfolio securities is subject to credit events, as the latter occur rarely and hence make it difficult to estimate default intensities and their correlation. The objective of the minisymposium is to bring together researchers who have done cutting edge research and developed fundamental results in the area of robust control and optimal investment.

Organizer: Agostino Capponi

Columbia University, USA

3:30-3:55 Time–consistent Investment under Model Uncertainty: The Robust Forward Criteria

Thaleia Zariphopoulou, University of Texas at Austin, USA

4:00-4:25 Robustness Issues in Risk Estimation

Alexander Schied, University of Mannheim, Germany

4:30-4:55 Risk Sensitive Asset Management and Cascading Defaults

John Birge, University of Chicago, USA

5:00-5:25 Robust Optimization of Credit Portfolios

Agostino Capponi, Columbia University, USA

Friday, November 18

MS29

Spectral and Transform Methods in Financial Mathematics

3:30 PM-5:30 PM

Room:Capital Ballroom H

For Part 2 see MS37

This mini-symposium presents recent developments and applications of spectral and transform methods in financial mathematics. The talks will focus on option pricing in models based on Levy processes and some non-Levy jump processes known as subordinate diffusions, as well as estimating the long-term factorization from the bond market.

Organizer: Lingfei Li

The Chinese University of Hong Kong, Hong Kong

Organizer: Rafael Mendoza-Arriaga

University of Texas at Austin, USA

3:30-3:55 Additive Subordination and Its Applications in Finance

Jing Li and Lingfei Li, The Chinese University of Hong Kong, Hong Kong; *Rafael Mendoza-Arriaga*, University of Texas at Austin, USA

4:00-4:25 Option Pricing in Some Non-Lévy Jump Models

Lingfei Li, The Chinese University of Hong Kong, Hong Kong

4:30-4:55 Double Spiral Method, the Generalized Hilbert Transform and Fast Pricing of Asian and Barrier Options

Sergei Levendorskii, University of Leicester, United Kingdom

5:00-5:25 Long Forward Probabilities, Recovery and the Term Structure of Bond Risk Premiums

Likuan Qin and Vadim Linetsky, Northwestern University, USA

Friday, November 18

MS30

Computational Optimization and Data Mining for Finance

3:30 PM-5:30 PM

Room:Capital Ballroom C

It is indisputable that both the amount of data and research activities in the data sciences have been growing at a fast speed. These rich resources can potentially enhance mathematical modeling and solutions in the field of finance and insurance. In this session, we present some recent research in computational optimization and data mining methods for valuation and risk management and explore its impact in finance and insurance.

Organizer: Yuying Li

University of Waterloo, Canada

3:30-3:55 Machine Learning & Portfolio Optimization

Gah-Yi Ban, London Business School, United Kingdom

4:00-4:25 Efficient Machine Learning Method for Risk Management of Large Variable Annuity Portfolios

Wei Xu, Tongji University, China; Yuehuan Chen, Cayuga Research Associates, Canada; Thomas F. Coleman, University of Waterloo, Canada

4:30-4:55 Stock Portfolio Selection Using Learning-to-Rabk Algorithms with News Sentiment

Somayeh Moazeni, Steve Yang, and Xiaodi Zhu, Stevens Institute of Technology, USA

5:00-5:25 Data Driven Risk Management

Yuying Li, Ke Nian, and Thomas F. Coleman, University of Waterloo, Canada

Friday, November 18

CP1

Financial Network Models

3:30 PM-5:30 PM

Room:Capital Ballroom G

Chair: Li-Hsien Sun, National Central University, Taiwan

3:30-3:55 Sensitivity Analysis of the Eisenberg-Noe Network Model
Weijie Pang, Worcester Polytechnic Institute, USA; Zach Feinstein, Washington University, St. Louis, USA; Birgit Rudloff, Wirtschafts University Vienna, Austria; Eric F. Schaanning, Imperial College of London, United Kingdom; Stephan Sturm, Worcester Polytechnic Institute, USA; Mackenzie Wildman, Lehigh University, USA

4:00-4:25 Heterogeneous Risk Preferences in Financial Markets
Tyler M. Abbot, Sciences Po, France

4:30-4:55 Network Sensitivity and Risk in Sharing Economies
Benjamin P. Harris, Srinivasan Radhakrishnan, and Sagar Kamarthi, Northeastern University, USA

5:00-5:25 Systemc Risk and Interbank Lending
Li-Hsien Sun, National Central University, Taiwan

Friday, November 18

CP2

Credit & Counterpart Risks

3:30 PM-5:30 PM

Room:Capital Ballroom B

Chair: Tao Pang, North Carolina State University, USA

3:30-3:55 Accelerating Xva Computations by Chebyshev Interpolation
Ricardo Pachon, Credit Suisse, United Kingdom

4:00-4:25 Credit Value Adjustment Calculation with Wrong Way Risk
Tao Pang, North Carolina State University, USA; Wei Chen and Le Li, SAS Institute, Inc., USA

4:30-4:55 Rational Multi-Curve Models with Counterparty-Risk Valuation Adjustments
David Glavind Skovmand, University of Copenhagen, Denmark; Andrea Macrina, University of London, United Kingdom; Stephane C. Crepey, Evry University, France; Tuyet Mai Ngyen, University of Evry-Val-d'Essonne, France

5:00-5:25 Pricing and Hedging Credit Derivatives with Dependent Structures
Dong-Mei Zhu, Southeast University, China; *Fenghui Yu* and Wai-Ki Ching, University of Hong Kong, China; Tak-Kuen Siu, Macquarie University, Sydney, Australia

Intermission

5:30 PM-5:45 PM

SIAG/FME Business Meeting

(Open to SIAG/FME members)

5:45 PM-6:30 PM

Room:Capital Ballroom D

Complimentary beer and wine will be served.

SIFIN Editorial Board Meeting

7:00 PM-9:00 PM

Room: George Bonnell-4th Floor

Saturday, November 19

Registration

8:00 AM-3:30 PM

Room:Ballroom Prefunction

MS31

Algorithmic and High-Frequency Trading - Part II of II

8:30 AM-10:30 AM

Room:Capital Ballroom D

For Part 1 see MS25

In modern electronic markets nearly all trading is executed using an algorithm. The arms race is now on hardware and the trading algorithms that run on them. A great deal of these algorithms rely on sophisticated mathematical models. This mini symposium brings together some of the cutting edge research papers which explore different topics including: optimal execution, adverse selection, Hawkes-based models, market making, portfolio execution, trading with information, market micro-structure, foreign exchange trading.

Organizer: Alvaro Cartea
University of Oxford, United Kingdom

8:30-8:55 Optimal Market Making
Olivier Gueant, Université Paris-Diderot, France

9:00-9:25 Trading Foreign Exchange Triplets
Tianyi Jia, University of Toronto, Canada

9:30-9:55 Portfolio Liquidity Estimation and Optimal Execution
Kai Yuan and Ciamac C. Moallemi, Columbia University, USA

10:00-10:25 Insider Trading with Residual Risk
Ryan Donnelly, EPFL, Switzerland

Saturday, November 19

MS32

Energy and Commodities Modelling

8:30 AM-10:30 AM

Room:Capital Ballroom A

Commodities is an asset class which for long has been the subject matter of the Finance and Economics literature. Research and trading activity in this field has heightened over the last couple of decades. Traditional agents with physical exposure to commodities, and those solely seeking financial exposure, are playing a key role in the growth of this asset class. This mini symposium brings together some of the cutting edge research papers which explore different topics including: ambiguity aversion, intraday trading, hedging, and tariff setting.

Organizer: Alvaro Cartea
University of Oxford, United Kingdom

8:30-8:55 Model Uncertainty in Electricity Interconnector Markets
Alvaro Cartea, University of Oxford, United Kingdom

9:00-9:25 Second-Best Tarification for a Producer-Provider of Electricity
Clemence Alasseur, EDF, France

9:30-9:55 Optimal Hedge Design
Andrea Roncoroni, ESSEC Business School, France

10:00-10:25 Intra-Day Trading at the Epex
Ruediger Kiesel and *Nikolaus Luckner*, University of Duisburg-Essen, Germany

Saturday, November 19

MS33

Managing Systemic Risk Based on Network Models

8:30 AM-10:30 AM

Room:Capital Ballroom F

The notion systemic risk refers to the fact that in case of local adverse shocks to one or several entities of a financial system, contagion channels, as for example default contagion or fire sales, may lead to the default of substantial parts of the system. It is thus of great importance to develop quantitative models that can help to better understand, monitor, and, given appropriate interaction, subsequently enhance the performance of complex financial systems. In order to describe the financial system as a whole, in a promising recent line of research, interconnections between financial institutions as well as asset holdings are described explicitly by network models.

Organizer: Nils Detering
University of California, Santa Barbara, USA

8:30-8:55 Bootstrap Percolation in Inhomogeneous, Directed Random Graphs and Financial Contagion
Nils Detering, University of California, Santa Barbara, USA; Thilo Meyer-Brandis and Konstantinos Panagiotou, University of Munich, Germany

9:00-9:25 Systemic Risk in Inhomogeneous Financial Networks
Thilo Meyer-Brandis, University of Munich, Germany; Nils Detering, University of California, Santa Barbara, USA; Konstantinos Panagiotou, University of Munich, Germany

9:30-9:55 Systemic Risk in Interbank Networks with Multiple Maturities
Michael Kusnetsov and Luitgard Veraart, London School of Economics and Political Science, United Kingdom

10:00-10:25 Liability Concentration and Systemic Losses in Financial Networks
Peng Chu Chen, Purdue University, USA; Agostino Capponi and David Yao, Columbia University, USA

Saturday, November 19

MS34

Risk Management and Financial Regulation

8:30 AM-10:30 AM

Room:Capital Ballroom G

The minisymposium focuses on new development in risk management, including the measurement of economic tail risk based on Choquet expected utility and elicitability, the effect of leverage regulation and market liquidity constraints on financial stability, the comparison of expected shortfall and value-at-risk for portfolio return, and the formulation of funding value adjustment under a framework of replication pricing.

Organizer: Xianhua Peng
Hong Kong University of Science and Technology, Hong Kong

8:30-8:55 On the Measurement of Economic Tail Risk
Xianhua Peng, Hong Kong University of Science and Technology, Hong Kong

9:00-9:25 Leverage, Market Liquidity, and Financial Fragility
Jing Chen, Chinese University of Hong Kong, Hong Kong

9:30-9:55 Diversification of Portfolio Tail Risk
Qi Wu, The Chinese University of Hong Kong, Hong Kong

10:00-10:25 Risk Managing FVA
Lixin Wu, Hong Kong University of Science and Technology, Hong Kong

Saturday, November 19

MS35

Portfolio Optimization Under Alternative Performance Criteria

8:30 AM-10:30 AM

Room:Capital Ballroom E

The minisymposium will cover new developments in portfolio optimization under alternative performance criteria. Topics related to mean-variance optimization, forward performance evaluation and ergodic control will be presented. Zhang will present a new approach for time-inconsistent problems, Angoshtari will present discrete models of forward performance, Liang will present a connection between forward performance and ergodic control, and Musiela will give a review lecture and open problems.

Organizer: Thaleia Zariphopoulou
University of Texas at Austin, USA

8:30-8:55 Predictable Forward Investment Preferences
Bahman Angoshtari, University of Michigan, USA

9:00-9:25 An Ergodic BSDE Approach to Entropic Risk Measures and their Large Time Behavior
Gechun Liang, King's College London, United Kingdom

9:30-9:55 Dynamic Utilities for Time Inconsistent Problems
Jianfeng Zhang, University of Southern California, USA

10:00-10:25 Filtrations and Investment
Marek Musiela, University of Oxford, United Kingdom

Saturday, November 19

MS36

Stochastic Local Volatility Models in Financial Engineering

8:30 AM-10:30 AM

Room:Capital Ballroom C

The proposed minisymposium will focus on the use of Stochastic Local Volatility models in Financial Mathematics. These models are popular in industry for yielding prices with marginal distributions consistent with observed option prices, while allowing for rich path dependent behavior. The mini symposium will discuss their applications in the industry, the means by which they are implemented and calibrated, and theoretical questions concerning existence and properties of such models. To this last point, there is currently no proof of existence, and it may not even be possible to construct such models with desirable properties (e.g. as a Markovian family).

Organizer: Scott Robertson
Boston University, USA

Organizer: Kasper Larsen
Carnegie Mellon University, USA

8:30-8:55 Stochastic Local Volatility Models for Foreign Exchange Markets: A Practitioner's View
Nicolas Hutchings, Bank of America Merrill Lynch, USA

9:00-9:25 The Particle Method for Smile Calibration and Its Application to Stochastic Local Volatility Models
Julien Guyon, Bloomberg LP, USA

9:30-9:55 Theoretical and Numerical Analysis of Local Stochastic Volatility Models
Frederic Abergel, CentraleSupéle, France

10:00-10:25 The Local Stochastic Volatility Puzzle, or How to Relieve a Hangover
Peter Austing, United Kingdom

Saturday, November 19

CP3

Risk-Averse Valuation & Strategies

8:30 AM-10:30 AM

Room:Capital Ballroom H

Chair: Michael Monoyios, Oxford University, United Kingdom

8:30-8:55 Local Risk-Minimization for Barndorff-Nielsen and Shephard Models
Takuji Arai, Keio University, Japan

9:00-9:25 Utility-Based Valuation of Perpetual Income Streams
Michael Monoyios, Oxford University, United Kingdom

9:30-9:55 Shortfall Aversion in a Finite Horizon
Dan Ren, University of Dayton, USA

10:00-10:25 Market Stability and Indifference Prices
Kim Weston, University of Texas at Austin, USA

Saturday, November 19

CP4

Optimal Investment and Consumption Strategies

8:30 AM-10:30 AM

Room:Capital Ballroom B

Chair: To Be Determined

8:30-8:55 Singular Control Approximation and Viscosity Solution Selection Principle in Optimal Investment and Consumption with Tax
Min Dai, National University of Singapore, Republic of Singapore

9:00-9:25 Dynamic Portfolio Optimization Across Hidden Market Regimes
Peter Nystrup and Henrik Madsen, Technical University of Denmark, Denmark; Erik Lindström, Lund University, Sweden

9:30-9:55 Cumulative Prospect Theory with Skewed Return Distribution
Traian A. Pirvu, McMaster University, Canada; Minsuk Kwak, Korea Advanced Institute of Science and Technology, Korea

10:00-10:25 Consumption in Incomplete Markets
Gu Wang, Worcester Polytechnic Institute, USA; Paolo Guasoni, Dublin City University, Ireland

Coffee Break

10:30 AM-10:55 AM

Room:Ballroom Prefunction

Closing Remarks

10:55 AM-11:00 AM

Room:Capital Ballroom DE

Saturday, November 19

IP6

Mathematical Models for Financial Asset Price Bubbles

11:00 AM-11:45 AM

Room:Capital Ballroom DE

Chair: Erhan Bayraktar, University of Michigan, USA

In this talk we present some recent results concerning the mathematical modelization of financial asset bubbles. We study a flow in the space of equivalent martingale measures and the corresponding shifting perception of the fundamental value of a given asset. We then extend the concept of financial bubble in a market model endowed with a set of probability measures, typically mutually singular to each other. We conclude by considering a mathematical model for the birth and evolution of bubbles in a network of investors.

Francesca Biagini
Ludwig-Maximilians-Universität München, Germany

Saturday, November 19

IP7

Systems of Backward Stochastic Differential Equations and Applications in Finance and Game Theory

11:45 AM-12:30 PM

Room:Capital Ballroom DE

Chair: Tomasz Bielecki, Illinois Institute of Technology, USA

Systems of nonlinear backward stochastic differential equations (BSDEs) appear throughout mathematical finance, optimal stochastic control and stochastic game theory. For example, the important question of existence and uniqueness of incomplete-market financial equilibria can be rephrased as a system of BSDEs under appropriate conditions. Unlike in the case of a single equation, where tight necessary and sufficient conditions for existence an uniqueness are known, only partial results are available for systems. Recently, Hao Xing and myself established existence and uniqueness for a wide class of Markovian systems of BSDEs with quadratic nonlinearities. This class is characterized by an abstract structural assumption on the generator, an a priori local-boundedness property, and a locally-Hölder-continuous terminal condition. Easily verifiable sufficient conditions for these assumptions are available and they apply to several systems found in applications, including the aforementioned stochastic equilibria in incomplete financial markets, stochastic differential games, as well as those related to construction of martingales on Riemannian manifolds. Joint work with Hao Xing (London School of Economics).

Gordan Žitkovic
University of Texas at Austin, USA

Lunch Break

12:30 PM-1:45 PM

Attendees on their own

Saturday, November 19

IP8

EM Algorithm and Stochastic Control

1:45 PM-2:30 PM

Room:Capital Ballroom DE

Chair: Peter Forsyth, University of Waterloo, Canada

We propose an algorithm called EM-Control (EM-C) algorithm to solve multi-period finite-time horizon stochastic control problems, where the optimal policy is not necessarily stationary. Generalizing the idea of the EM algorithm, the EM-C algorithm sequentially updates the control parameters in each time period in a time-backward manner. Similar to the EM algorithm, the EM-C algorithm has monotonicity of performance improvement in every iteration, and hence has good convergence properties. We apply the EM-C algorithm to solve stochastic control problems in real business cycle and monopoly pricing of airline tickets, showing the effectiveness of the algorithm. This is a joint work with Xianhua Peng and Xingbo Xu.

Steven Kou
National University of Singapore, Singapore

Coffee Break

2:30 PM-3:00 PM

Room:Ballroom Prefunction

Saturday, November 19

MS37

Optimal Trading and Limit Order Books

3:00 PM-4:30 PM

Room:Capital Ballroom D

For Part 1 see MS29

This minisymposium presents new developments in research related to optimal trading and limit order books.

Organizer: Lingfei Li
The Chinese University of Hong Kong, Hong Kong

Organizer: Rafael Mendoza-Arriaga
University of Texas at Austin, USA

3:00-3:25 A Simulation Method for Stochastic Dynamic Programming with Applications in Algorithmic Trading
Nan Chen, The Chinese University of Hong Kong, Hong Kong

4:30-4:55 Optimal Deleveraging under Cross-Asset Price Pressure
Jingnan Chen, Singapore University of Technology & Design, Singapore

4:00-4:25 Optimal Order Exposure in a Limit Order Book
Xuefeng Gao, The Chinese University of Hong Kong, Hong Kong

Saturday, November 19

MS38

Advanced Numerical Methods for Valuation, Calibration and Parameter Estimation in Financial Applications

3:00 PM-5:30 PM

Room:Capital Ballroom G

Every day, a huge amount of options is traded all over the world. Efficient, accurate and stable methods for pricing of options and estimation of parameters in the underlying models are therefore of utmost importance. In this minisymposium we will discuss a range of advanced numerical methods relevant for contemporary PDE-problems in finance, both for valuation and calibration/parameter estimation. Focus of the presentations is on finite difference methods, meshfree/radial basis functions methods and operator splitting schemes.

Organizer: Karel In `t Hout
University of Antwerp, Belgium

Organizer: Lina von Sydow
Uppsala University, Sweden

3:00-3:25 ADI Schemes for the Valuation of Multi-Asset American-Style Options
Karel In 't Hout and Radoslav Valkov, University of Antwerp, Belgium

3:30-3:55 ADI Finite Difference Schemes for the Calibration of Stochastic Local Volatility Models
Maarten Wyns and Karel In 't Hout, University of Antwerp, Belgium

4:00-4:25 New Fully Implicit Hv Finite-Difference Scheme Combined with the Method of Pseudo-Differential Operator for Pricing Lsv Models with Stochastic Interest Rates and Correlated Jumps
Andrey Itkin, New York University, USA

4:30-4:55 Pricing American Options under Multi-State Regime Switching with Jumps
Abdul Khaliq, Middle Tennessee State University, USA; Mohammad Yousuf, King Fahd University of Petroleum and Minerals, Saudi Arabia

5:00-5:25 Option Pricing under the Cgmy-Process
Lina von Sydow, Josef Hook, and Gustav Ludvigsson, Uppsala University, Sweden

Saturday, November 19

MS39

Funding and Market Liquidity in Financial Systems

3:00 PM-5:00 PM

Room:Capital Ballroom E

This minisymposium will present recent advances in the modeling of liquidity provision. We will discuss funding liquidity, i.e., the ability of a borrower to fund its operations, which leads to a new class of optimal investment problems under funding risk. A second talk explores the link between market liquidity and system structure. Finally, data needs in measuring both funding and market liquidity will be addressed.

Organizer: Hamed Amini
University of Miami, USA

Organizer: Andreea Minca
Cornell University, USA

3:00-3:25 Optimal Investment under Funding Risk
Andrey Krishenik, JP Morgan Chase, USA; Andreea Minca, Cornell University, USA

3:30-3:55 Risk-Based Capital Requirements and Optimal Liquidation in a Stress Scenario
Lakshithe Wagalath, IESEG School of Management, France

4:00-4:25 Dynamic Prudential Regulation
Ajay Subramanian, Georgia State University, USA

4:30-4:55 Optimal Execution of Limit and Market Orders with Trade Director, Speed Limiter, and Fill Uncertainty
Brian M. Ward and Tim Leung, Columbia University, USA; Brian Bulthuis and Julio Concha, KCG Holdings, Inc, USA

Saturday, November 19

MS40

Stochastic Control Problems in Finance

3:00 PM-5:00 PM

Room:Capital Ballroom B

Stochastic control theory is an important branch of mathematical finance that has given rise to numerous useful theoretical results and computational tools in a wide range of financial applications. This mini-symposium collects a number of talks that reflect recent developments of stochastic control theory within mathematical finance. They all share a common emphasis on the representation and verification of the optimal policies, but discuss different financial applications, including risk management, multi-agent games, inventory control, and optimal dividend problems.

Organizer: Qingshuo Song
City University of Hong Kong, Hong Kong

3:00-3:25 Healthcare and Consumption with Aging
Paolo Guasoni, Boston University, USA; *Yu-Jui Huang*, University of Colorado Boulder, USA

3:30-3:55 Closed-Loop Strategies in Stochastic Linear-Quadratic Differential Games
Jiongmin Yong, University of Central Florida, USA; Jingrui Sun, Hong Kong Polytechnic University, China

4:00-4:25 Continuous Inventory Models of Diffusion Type: Long-Term Average Cost Criterion
Kurt Helmes, Humboldt University Berlin, Germany; Richard Stockbridge and *Chao Zhu*, University of Wisconsin, Milwaukee, USA

4:30-4:55 Optimal Dividend Strategies of Two Collaborating Businesses with Transaction Costs
Jia-Wen Gu and Mogens Steffensen, University of Copenhagen, Denmark; *Harry Zheng*, Imperial College London, United Kingdom

Saturday, November 19

MS41

Recent Advances in Stochastic Volatility Models

3:00 PM-5:00 PM

Room:Capital Ballroom C

This minisymposium focuses on recent developments in stochastic volatility models. The goal is to have a collection of talks that discuss different aspects of the theory and methodology of stochastic volatility models, including pricing, hedging, calibration, and filtering. Special emphasis is placed on models in which the volatility process is non-Markovian.

Organizer: Alexandra Chronopoulou
University of Illinois at Urbana-Champaign, USA

3:00-3:25 Long Memory and Roughness in Stochastic Volatility Models
Alexandra Chronopoulou, University of Illinois at Urbana-Champaign, USA

3:30-3:55 Gaussian and Self-similar Stochastic Volatility Models
Archil Gulisashvili, Ohio University, USA

4:00-4:25 Fractional Stochastic Volatility
Knut Solna, University of California, Irvine, USA; Josselin Garnier, Université Paris-Diderot, France

4:30-4:55 Bayesian Modeling of High-Frequency Crude Oil Prices
Jonathan R. Stroud, Georgetown University, USA; Michael Johannes, Columbia University, USA; Norman Seeger, Vrije Universiteit Brussel, Belgium

Saturday, November 19

CP5

Stochastic Control & Analysis for Trading

3:00 PM-4:30 PM

Room:Capital Ballroom F

Chair: To Be Determined

3:00-3:25 A Probabilistic Max-Plus Numerical Method for Solving Stochastic Control Problems
Eric Fodjo, Ecole Polytechnique, France

3:30-3:55 Robust Dynkin Game
Erhan Bayraktar, University of Michigan, USA; *Song Yao*, University of Pittsburgh, USA

4:00-4:25 Endogenous Formation of Limit Order Books: Dynamics Between Trades
Sergey Nadtochiy, University of Michigan, Ann Arbor, USA; Roman Gayduk, University of Michigan, USA

Saturday, November 19

CP6

Computational Methods for Options Pricing

3:00 PM-5:00 PM

Room:Capital Ballroom A

Chair: Dan Stefanica, Baruch College, USA

3:00-3:25 Asymptotic Expansions for Fractional Stochastic Volatility Models
Blanka Horvath, Imperial College London, United Kingdom

3:30-3:55 Asymptotic Optimal Strategy for Portfolio Optimization in a Slowly Varying Stochastic Environment
Ruimeng Hu and Jean-Pierre Fouque, University of California, Santa Barbara, USA

4:00-4:25 A Sharp Approximation for ATM-Forward Option Prices and Implied Volatilites
Dan Stefanica and Rados Radoicic, Baruch College, USA

4:30-4:55 Functional Ito Calculus, Path-Dependence and the Computation of Greeks
Yuri Fahham Saporito, University of California, Santa Barbara, USA; Samy Jazaerli, Ecole Polytechnique, France

Saturday, November 19

CP7

Estimation Methods for Finance

3:00 PM-5:00 PM

Room:Capital Ballroom H

Chair: Zhenyu Cui, Stevens Institute of Technology, USA

3:00-3:25 Parameter Estimation in Finance Using Radial Basis Function Methods
Elisabeth Larsson and Josef Höök, Uppsala University, Sweden; Erik Lindström, Lund University, Sweden; Lina von Sydow, Uppsala University, Sweden

3:30-3:55 Econometric Estimation of Goodwin Growth Models
Aditya Maheshwari, University of California, Santa Barbara, USA; Matheus Grasselli, McMaster University, Canada

4:00-4:25 Estimation of Credit Models Via Expectation Maximization and Filtering
Georg Mikus and Wolfgang Schmidt, Frankfurt School of Finance & Management, Germany

4:30-4:55 Transform Analysis for Markov Processes and Applications: An Operator Approach
Zhenyu Cui and Chihoon Lee, Stevens Institute of Technology, USA; Yanchu Liu, Sun Yat-Sen University, China; Lingjiong Zhu, Florida State University, USA

FM16 Abstracts

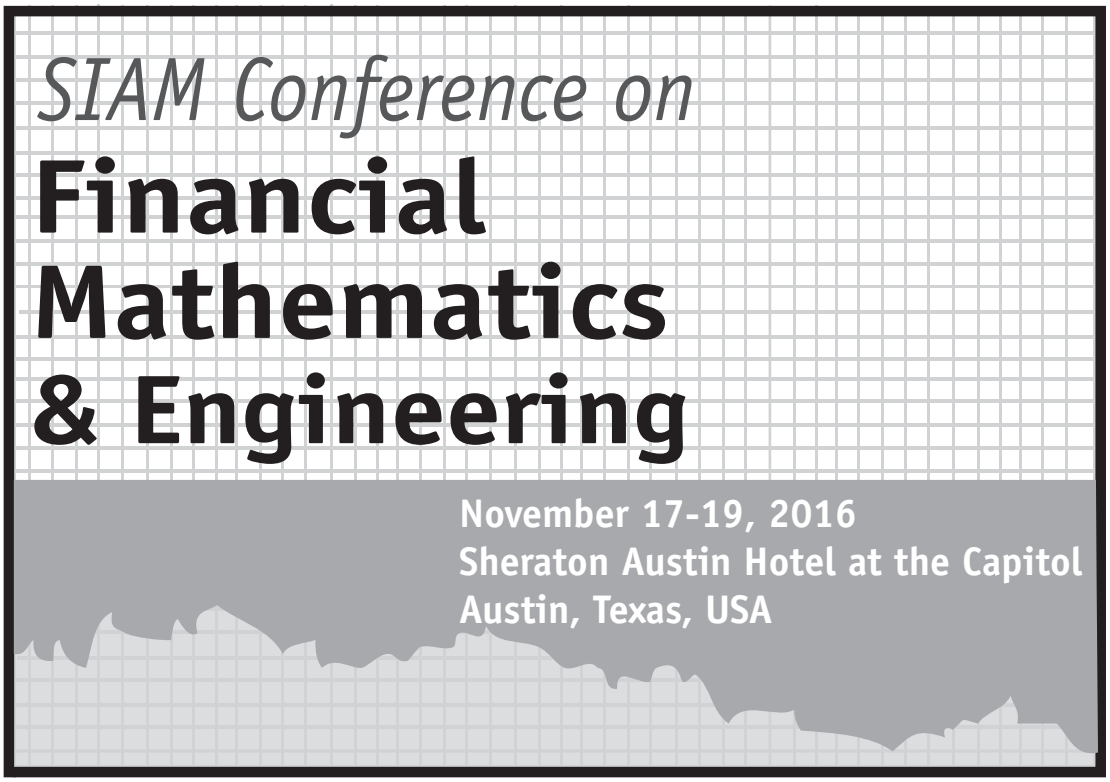
SIAM Conference on

Financial Mathematics & Engineering

November 17-19, 2016
Sheraton Austin Hotel at the Capitol
Austin, Texas, USA

Notes

FM16 Speaker and Organizer Index



Italicized names indicate session organizers

Italicized names indicate session organizers

FM16 Budget

Conference Budget
SIAM Conference on Financial Mathematics and Engineering
November 17-19, 2016
Austin, Texas

Expected Paid Attendance	240	
Revenue		
Registration Income		$92,625.00
	Total	$92,625.00
Expenses		
Printing		$1,400.00
Organizing Committee		$3,100.00
Invited Speakers		$10,125.00
Food and Beverage		$20,000.00
Equipment Rental		$16,000.00
Room Rental		$800.00
Advertising		$5,200.00
Conference Labor (including benefits)		$38,714.00
Other (supplies, staff travel, freight, misc.)		$5,825.00
Administrative		$9,675.00
Accounting/Distribution & Shipping		$5,191.00
Information Systems		$9,622.00
Customer Service		$3,502.00
Marketing		$5,471.00
Office Space (Building)		$3,558.00
Other SIAM Services		$3,618.00
	Total	$141,801.00
Net Conference Expense		-$49,176.00
Support Provided by SIAM		$49,176.00
		$0.00

Estimated Support for Travel Awards not included above:

Early Career and Students	15	$11,350.00

Sheraton Austin Hotel at the Capitol

Hotel Floor Plan