

*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.



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## Table of Contents

General Information.....	2
Program-at-a-Glance.....	3
Get-togethers.....	4
Invited Plenary Presentations .....	5
Prizes.....	7
Program Schedule.....	9
Abstracts .....	37
Speaker and Organizer Index .....	73
Conference Budget .....	Inside Back cover
Hotel Meeting Room Map.....	Back cover

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## SIAM Registration Desk

The SIAM registration desk is located at the Registration Counter – 6th Floor. It is open during the following hours:

Wednesday, November 12

5:00 PM – 7:00 PM

Thursday, November 13

8:00 AM – 7:30 PM

Friday, November 14

8:00 AM – 3:30 PM

Saturday, November 15

8:00 AM – 4:30 PM

## Hotel Address

Palmer House, a Hilton Hotel  
17 East Monroe Street  
Chicago, Illinois, 60603 USA  
Toll Free Reservations (US and Canada): 1-877-865-5320  
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Hotel web address:  
<http://www3.hilton.com/en/hotels/illinois/palmer-house-a-hilton-hotel-CHIPHHH/index.html>

## Hotel Telephone Number

To reach an attendee or leave a message, call +1-312-726-7500. 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 and check-out time is 11:00 PM.

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For local child care information, please contact the concierge at the Palmer House for up-to-date recommendations: +1-312-726-7500.

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## Meeting At-A-Glance

Wednesday, November 12

5:00 PM – 7:00 PM

Registration

*Registration Counter - 6th Floor*

Thursday, November 13

8:00 AM - 7:30 PM

Registration

*Registration Counter - 6th Floor*

10:00 AM - 12:00 PM

**Concurrent Sessions****MS1** Portfolio Selection and Asset Pricing in the Non-EUT Framework*Water Tower Parlor - 6th Floor***MS2** Variable Annuities*Adams - 6th Floor***MS3** Radial Basis Function Based Methods in Finance*Grant Park Parlor - 6th Floor***MS4** Topics from Derivatives Central Clearing*Hancock Parlor - 6th Floor***CP1** Credit Risk*Millennium Parlor - 6th Floor***CP2** Econometrics/Empirics*LaSalle 5 - 7th Floor***CP3** Numerical Analysis - Part 1*LaSalle 1 - 7th Floor***CP4** Options - Part 1*LaSalle 3 - 7th Floor***CP5** Stochastic Control - Part 1*LaSalle 2 - 7th Floor*

12:00 PM - 1:25 PM

Lunch Break

*Attendees on their own*

1:25 PM - 1:30 PM

Welcome Remarks

*Adams - 6th Floor*

1:30 PM - 2:15 PM

**IP1** No-arbitrage Under Model Ambiguity and Fundamental Theorems of Asset Pricing  
Bruno Bouchard, Université Paris-Dauphine and ENSAE-ParisTech, Ceremade and Crest, France*Adams - 6th Floor*

Thursday, November 13

2:15 PM - 3:00 PM

**IP2** Multi-Period Mean Variance Asset Allocation: Is It Bad To Win the Lottery?  
Peter Forsyth, University of Waterloo, Canada*Adams - 6th Floor*

3:00 PM - 3:30 PM

Coffee Break

*Monroe - 6th Floor*

3:30 PM - 5:30 PM

**Concurrent Sessions****MS5** Advanced Numerical Techniques in Financial Mathematics - Part I of II  
*Adams - 6th Floor***MS6** Optimal Stopping with Financial Applications*Grant Park Parlor - 6th Floor***MS7** Optimal Investment with Transaction Costs*Hancock Parlor - 6th Floor***MS8** Dynamic Risk and Performance Measures and Related Fields - Part I of II*Water Tower Parlor - 6th Floor***MS9** Liquidity Risk in a System Context*Millennium Parlor - 6th Floor***MS10** Mean-field Games Modeling in Economy and Finance*LaSalle 1 - 7th Floor***CP6** Fixed Income*LaSalle 2 - 7th Floor***CP7** Options - Part 2*LaSalle 3 - 7th Floor***CP8** Systemic Risk*LaSalle 5 - 7th Floor*

5:30 PM - 5:45 PM

Intermission

5:45 PM - 6:30 PM

**IP3** Bid-Ask Imbalance and Trade Arrival Modeling

Michael Sotiropoulos, Bank of America Merrill Lynch, USA

*Adams - 6th Floor*

6:30 PM - 8:30 PM

Welcome Reception

*Monroe - 6th Floor*

Friday, November 14

8:00 AM - 3:30 PM

Registration

*Registration Counter - 6th Floor*

8:30 AM - 10:30 AM

**Concurrent Sessions****MS11** Dynamic Risk and Performance Measures and Related Fields - Part II of II*Water Tower Parlor - 6th Floor***MS12** Mean Field Games - Part I of II*Adams - 6th Floor***MS13** Recent Progress in Equilibrium Theory*LaSalle 1 - 7th Floor***MS14** Counterparty Risk, Liquidity and Funding - Part I of II*Grant Park Parlor - 6th Floor***MS15** Systemic and Liquidity Risk*Hancock Parlor - 6th Floor***MS16** Asymptotic Methods in Continuous-Time Models with Jumps*LaSalle 2 - 7th Floor***CP9** High-Frequency Markets*Millennium Parlor - 6th Floor***CP10** Risk Measures*LaSalle 3 - 7th Floor***CP11** Stochastic Volatility - Part 1*LaSalle 5 - 7th Floor*

10:30 AM - 10:55 AM

Coffee Break

*Monroe - 6th Floor*

10:55 AM - 11:00 AM

Announcements

*Adams - 6th Floor*

11:00 AM - 11:45 AM

**IP4** Robust Meets Realistic: Interpolating Between Model-Specific and Model-Free Settings for Pricing and Hedging

Jan Obloj, Oxford University, United Kingdom

*Adams - 6th Floor*

11:45 AM - 12:30 PM

**IP5** Long-Term Valuation and Misspecified Recovery

Lars Peter Hansen, The University of Chicago, USA

*Adams - 6th Floor*

### Meeting At-A-Glance

## Friday, November 14      Saturday, November 15      Saturday, November 15

**12:30 PM - 2:00 PM**  
Lunch Break  
*Attendees on their own*

**2:00 PM - 2:30 PM**  
**SP1** SIAG/FME Junior Scientist Prize Lecture:  
Some Financial Markets with Discontinuities  
Tomoyuki Ichiba, University of California,  
Santa Barbara, USA  
*Adams - 6th Floor*

**2:30 PM - 3:00 PM**  
Coffee Break   
*Monroe - 6th Floor*

**3:00 PM - 5:00 PM**  
**Concurrent Sessions**  
**MS17** Large Population Stochastic Control  
*LaSalle 1 - 7th Floor*

**MS18** Statistical Analysis of Risk and Stress Tests for Regulatory Policies - Part I of II  
*Grant Park Parlor - 6th Floor*

**MS19** Spectral and Transform Methods in Finance - Part I of II  
*Hancock Parlor - 6th Floor*

**MS20** Robust Hedging and Pricing under Model Uncertainty - Part I of II  
*Adams - 6th Floor*

**MS21** Systemic Financial Risk  
*Millennium Parlor - 6th Floor*



**MS22** Operator Splitting Methods for Pricing Options  
*LaSalle 2 - 7th Floor*

**MS23** Algorithmic Trading - Part I of II  
*Water Tower Parlor - 6th Floor*

**CP12** Commodities  
*LaSalle 3 - 7th Floor*

**CP13** Numerical Analysis - Part 2  
*LaSalle 5 - 7th Floor*

**5:00 PM - 5:15 PM**  
Intermission

**5:15 PM - 6:00 PM**  
SIAG/FME Business Meeting    
*Adams - 6th Floor*  
*Complimentary beer and wine will be served.*

**8:00 AM - 4:30 PM**  
Registration  
*Registration Counter - 6th Floor*

**8:30 AM - 10:30 AM**  
**Concurrent Sessions**

**MS24** Statistical Inference for Continuous-time Models of Asset Prices  
*Grant Park Parlor - 6th Floor*

**MS25** Algorithmic Trading - Part II of II  
*Water Tower Parlor - 6th Floor*

**MS26** Spectral and Transform Methods in Finance - Part II of II  
*Millennium Parlor - 6th Floor*

**MS27** Robust Hedging and Pricing under Model Uncertainty - Part II of II  
*LaSalle 1 - 7th Floor*

**MS28** Monte Carlo Methods in Finance  
*Hancock Parlor - 6th Floor*

**MS29** Forward Asset Allocation  
*Adams - 6th Floor*

**CP14** Insurance  
*LaSalle 5 - 7th Floor*

**CP15** Stochastic Control - Part 2  
*LaSalle 2 - 7th Floor*

**CP16** Stochastic Volatility - Part 2  
*LaSalle 3 - 7th Floor*

**10:30 AM - 10:55 AM**  
Coffee Break   
*Monroe - 6th Floor*

**11:00 AM - 11:45 AM**  
**IP6** Moral Hazard in Dynamic Risk Management  
Jakša Cvitanic, California Institute of Technology, USA  
*Adams - 6th Floor*


**11:45 AM - 12:30 PM**  
**IP7** Adaptive Grids in Regression Monte Carlo  
Mike Ludkovski, University of California, Santa Barbara, USA  
*Adams - 6th Floor*

**12:30 PM - 2:00 PM**  
Lunch Break  
*Attendees on their own*

**12:30 PM - 2:00 PM**  
SIAG/FME Conference Paper Prize Session  
*Adams-6th Floor*

**2:00 PM - 2:45 PM**  
**IP8** The Value of Being Lucky: Option Backdating and Non-diversifiable Risk  
Vicky Henderson, University of Warwick, United Kingdom  
*Adams - 6th Floor*

**2:45 PM - 3:30 PM**  
**IP9** The Value of Queue Position in a Limit Order Book  
Ciamac C. Moallemi, Columbia University, USA  
*Adams - 6th Floor*

**3:30 PM - 4:00 PM**  
Coffee Break   
*Monroe - 6th Floor*

**4:00 PM - 6:00 PM**  
**Concurrent Sessions**  
**MS30** Advanced Numerical Techniques in Financial Mathematics - Part II of II  
*LaSalle 1 - 7th Floor*

**MS31** Asymptotics in Finance  
*Hancock Parlor - 6th Floor*

**MS32** Mean Field Games - Part II of II  
*Grant Park Parlor - 6th Floor*





**MS33** Statistical Analysis of Risk and Stress Tests for Regulatory Policies - Part II of II  
*Millennium Parlor - 6th Floor*

**MS34** Counterparty Risk, Liquidity and Funding - Part II of II  
*Adams - 6th Floor*

**MS35** Stochastic Financial Equilibria  
*Water Tower Parlor - 6th Floor*

**CP17** Stochastic Control - Part 3  
*LaSalle 2 - 7th Floor*

**Key to abbreviations and symbols**

CP	=	Contributed Presentation
IP	=	Invited Speaker
MS	=	Minisymposium
	=	Business Meeting
	=	Coffee Break
	=	Refreshments
	=	Special Lecture

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## Funding Agencies

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.



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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.

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All other concurrent/breakout rooms will have one (1) screen and one (1) data projector. Cables or adaptors for Apple computers are not supplied, as they vary for each model. Please bring your own cable/adaptor if using an Apple computer. Overhead projectors will be provided only if requested.

If you have questions regarding availability of equipment in the meeting room of your presentation, or to request an overhead projector for your session, please see a SIAM staff member at the registration desk.

## Internet Access

Attendees booked within the SIAM room block will have complimentary wireless Internet access in their guest rooms. All conference attendees will have wireless Internet access in the meeting space for no additional fee. In addition, a limited number of computers with Internet access will be available for attendee use during registration hours.

## Registration Fee Includes

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

## Job Postings

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

## 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. If a SIAM books representative is not available, completed order forms and payment (credit cards are preferred) may be taken to the SIAM registration desk. The books table will close at 5:00 PM on Friday, November 14.

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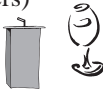
A space for emergency contact information is provided on the back of your name badge. Help us help you in the event of an emergency!

## Comments?

Comments about SIAM meetings are encouraged! Please send to: Cynthia Phillips, SIAM Vice President for Programs ([vpp@siam.org](mailto:vpp@siam.org)).

## Get-togethers

- Welcome Reception   
Thursday, November 13  
6:30 PM – 8:30 PM

- Business Meeting (open to SIAG/FME members)   
Friday, November 14  
5:15 PM – 6:00 PM  
*Complimentary beer and wine will be served.*

## Please Note

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## Invited Plenary Speakers

*\*\*All Invited Plenary Presentations will take place in Adams – 6th Floor\*\**

**Thursday, November 13**

**1:30 PM – 2:15 PM**

**IP1** No-arbitrage Under Model Ambiguity and Fundamental Theorems of Asset Pricing

**Bruno Bouchard**, *Université Paris-Dauphine and ENSAE-ParisTech,  
Ceremade and Crest, France*

**2:15 PM – 3:00 PM**

**IP2** Multi-Period Mean Variance Asset Allocation: Is It Bad To Win the Lottery?

**Peter Forsyth**, *University of Waterloo, Canada*

**5:45 PM – 6:30 PM**

**IP3** Bid-Ask Imbalance and Trade Arrival Modeling

**Michael Sotiropoulos**, *Bank of America Merrill Lynch, USA*

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**Friday, November 14**

**11:00 AM – 11:45 AM**

**IP4** Robust Meets Realistic: Interpolating Between Model-Specific and Model-Free Settings  
for Pricing and Hedging

**Jan Obloj**, *University of Manchester, United Kingdom*

**11:45 AM – 12:30 PM**

**IP5** Long-Term Valuation and Misspecified Recovery

**Lars Peter Hansen**, *The University of Chicago, USA*

## Invited Plenary Speakers

*\*\*All Invited Plenary Presentations will take place in Adams – 6th Floor \*\**

**Saturday, November 15**

**11:00 AM – 11:45 AM**

**IP6** Moral Hazard in Dynamic Risk Management  
**Jakša Cvitanic**, *California Institute of Technology, USA*

**11:45 AM – 12:30 PM**

**IP7** Adaptive Grids in Regression Monte Carlo  
**Mike Ludkovski**, *University of California, Santa Barbara, USA*

**2:00 PM – 2:45 PM**

**IP8** The Value of Being Lucky: Option Backdating and Non-diversifiable Risk  
**Vicky Henderson**, *University of Warwick, United Kingdom*

**2:45 PM – 3:30 PM**

**IP9** The Value of Queue Position in a Limit Order Book  
**Ciamac C. Moallemi**, *Columbia University, USA*



## Prizes

*\*\*All Prize Presentations will take place in Adams\*\**

**Friday, November 14**

**2:00 PM – 2:30 PM**

**SP1 SIAG/FME Junior Scientist Prize Lecture**

Some Financial Markets with Discontinuities

**Tomoyuki Ichiba**, *University of California, Santa Barbara, USA*

**Saturday, November 15**

**12:30 PM – 2:00 PM**

**SIAG/FME Conference Paper Prize Session**

*Information not available at time of publication.*

AMERICAN MATHEMATICAL SOCIETY

# From the American Mathematical Society



## TEXTBOOK **Probability Theory in Finance**

A Mathematical Guide to the Black-Scholes Formula, Second Edition

Seán Dineen, *University College Dublin, Ireland*

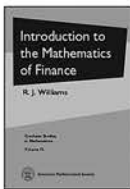
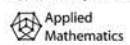
*In addition to the usual improvements in response to comments and suggestions, the new edition reflects the experience of teaching real analysis. ... Dineen is doing something valuable by trying to find ways to communicate mathematics in a serious way to an audience that often gets little more than recipes and rules. It's a project definitely worth supporting.*

—Fernando Q. Gouvêa, *MAA Reviews*

An outstanding introduction to the Black-Scholes formula for students of mathematical finance, in which the author employs a first-principles approach by developing only the minimum background necessary to justify mathematical concepts while placing mathematical developments in context.

**Graduate Studies in Mathematics**, Volume 70; 2013; 305 pages; Hardcover; ISBN: 978-0-8218-9490-3; List US\$65; AMS members US\$52; Order code GSM/70.R

Supplementary Reading



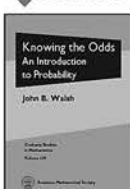
## Supplementary Reading **Introduction to the Mathematics of Finance**

R. J. Williams, *University of California, San Diego, La Jolla, CA*

*The text is clearly written and well-arranged and most of the results are proved in detail. Each chapter is completed with exercises, which makes the textbook very comprehensive.*

—EMS Newsletter

**Graduate Studies in Mathematics**, Volume 72; 2006; 150 pages; Hardcover; ISBN: 978-0-8218-3903-4; List US\$40; AMS members US\$32; Order code GSM/72



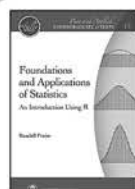
## TEXTBOOK **Knowing the Odds**

An Introduction to Probability

John B. Walsh, *University of British Columbia, Vancouver, BC, Canada*

A leisurely introduction to all of the standard material that one would want in a full-year probability course, with a slant toward applications in financial analysis.

**Graduate Studies in Mathematics**, Volume 139; 2012; 421 pages; Hardcover; ISBN: 978-0-8218-8532-1; List US\$75; AMS members US\$60; Order code GSM/139



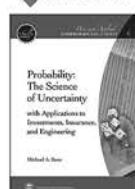
## Foundations and Applications of Statistics

An Introduction Using R

Randall Pruim, *Calvin College, Grand Rapids, MI*

An introduction to statistics that relies heavily on computation and that uses statistics as a means for motivating probability.

**Pure and Applied Undergraduate Texts**, Volume 13; 2011; 615 pages; Hardcover; ISBN: 978-0-8218-5233-0; List US\$85; AMS members US\$68; Order code AMSTEXT/13



## TEXTBOOK **Probability: The Science of Uncertainty**

with Applications to Investments, Insurance, and Engineering

Michael A. Bean

A review of the basic probability of distributions, emphasizing the many applications arising in investments, insurance and engineering.

**Pure and Applied Undergraduate Texts**, Volume 6; 2001; 448 pages; Hardcover; ISBN: 978-0-8218-4792-3; List US\$72; AMS members US\$57.60; Order code AMSTEXT/6



## Probability Tales

Charles M. Grinstead, *Swarthmore College, PA*, William P. Peterson, *Middlebury College, VT*, and J. Laurie Snell, *Dartmouth College, Hanover, NH*

An in-depth examination of four popular real-world topics that illustrate the elements of probability theory.

**Student Mathematical Library**, Volume 57; 2011; 237 pages; Softcover; ISBN: 978-0-8218-5261-3; List US\$42; All individuals US\$33.60; Order code STML/57

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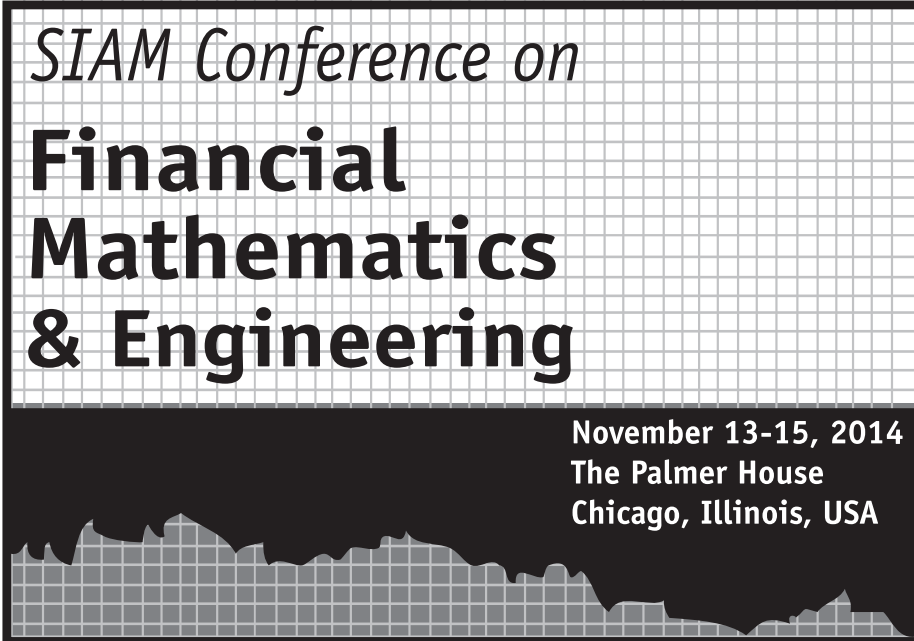
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## FM14 Program



*SIAM Conference on*  
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November 13-15, 2014  
The Palmer House  
Chicago, Illinois, USA

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

[www.siam.org/activity/fme](http://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.

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- Special sessions at SIAM Annual Meetings
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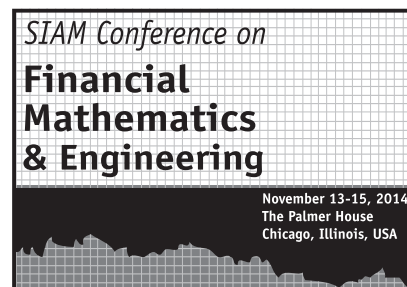
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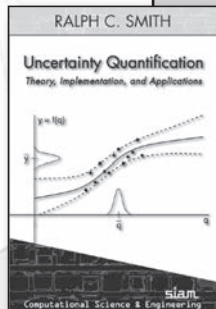
# SIAM BOOKS

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## Uncertainty Quantification: Theory, Implementation, and Applications

Ralph C. Smith  
*Computational Science and Engineering 12*

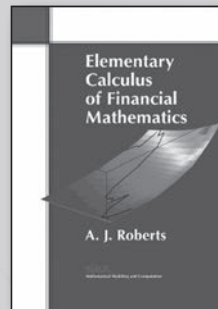


The field of uncertainty quantification is evolving rapidly because of increasing emphasis on models that require quantified uncertainties for large-scale applications, novel algorithm development, and new computational architectures that facilitate implementation of these algorithms. *Uncertainty Quantification* provides readers with the basic concepts, theory, and algorithms necessary to quantify input and response uncertainties for simulation models arising in a broad range of disciplines. The book begins with a detailed discussion of applications where uncertainty quantification is critical for both scientific understanding and policy. It then covers concepts from probability and statistics, parameter selection techniques, frequentist and Bayesian model calibration, propagation of uncertainties, quantification of model discrepancy, surrogate model construction, and local and global sensitivity analysis. The author maintains a complementary web page where readers can find data used in the exercises and other supplementary material.

2013 • xviii + 382 pages • Hardcover • 978-1-611973-21-1  
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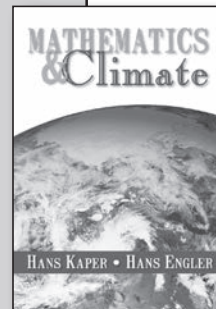
## Elementary Calculus of Financial Mathematics

A. J. Roberts  
*Mathematical Modeling and Computation 15*



This book introduces the fascinating area of financial mathematics and its calculus in an accessible manner geared toward undergraduate students. Using little high-level mathematics, the author presents the basic methods for evaluating financial options and building financial simulations. By emphasizing relevant applications and illustrating concepts with color graphics, *Elementary Calculus of Financial Mathematics* presents the crucial concepts needed to understand financial options among these fluctuations. Among the topics covered are the binomial lattice model for evaluating financial options, the Black–Scholes and Fokker–Planck equations, and the interpretation of Ito's formula in financial applications. Each chapter includes exercises for student practice and the appendices offer MATLAB® and SCILAB code as well as alternate proofs of the Fokker–Planck equation and Kolmogorov backward equation.

2008 • xii + 128 pages • Softcover • 978-0-898716-67-2  
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## Mathematics and Climate

Hans Kaper  
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best book of 2013,

*Mathematics and Climate* is a timely textbook with wide appeal. It is aimed at students and researchers in mathematics and statistics who are interested in current issues of climate science, as well as at climate scientists who wish to become familiar with qualitative and quantitative methods of mathematics and statistics. The authors emphasize conceptual models that capture important aspects of Earth's climate system and present the mathematical and statistical techniques that can be applied to their analysis. Topics from climate science include the Earth's energy balance, temperature distribution, ocean circulation patterns such as El Niño–Southern Oscillation, ice caps and glaciation periods, the carbon cycle, and the biological pump. Among the mathematical and statistical techniques presented in the text are dynamical systems and bifurcation theory, Fourier analysis, conservation laws, regression analysis, and extreme value theory.

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## Wednesday, November 12

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### Registration

5:00 PM-7:00 PM

Room: Registration Counter - 6th Floor

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## Thursday, November 13

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### Registration

8:00 AM-7:30 PM

Room: Registration Counter - 6th Floor

Thursday, November 13

## MS1

### Portfolio Selection and Asset Pricing in the Non-EUT Framework

10:00 AM-12:00 PM

Room: Water Tower Parlor - 6th Floor

A variety of alternative theories to the expected utility theory (EUT) have been proposed in the literature to better describe individuals' preference under risk. This minisymposium is devoted to the recent advances in portfolio selection and asset pricing based on these alternative theories. Two of the four speakers address portfolio selection problems under the rank-dependent expected utility theory and under a general law-invariant preference measure while the other two study equilibrium asset pricing problems in which the agent has non-EUT preference relations such as those with time-changing risk aversion and those represented by the cumulative prospect theory.

#### Organizer: Xuedong He

*Columbia University, USA*

#### 10:00-10:25 Rank Dependent Utility and Risk Taking in Complete Markets

*Xuedong He, Columbia University, USA;*

*Roy Kouwenberg, Mahidol University, Thailand; Xunyu Zhou, University of Oxford, United Kingdom, and The Chinese University of Hong Kong, China*

#### 10:30-10:55 Rationalizing Investors' Choices

*Carole Bernard, University of Waterloo, Canada; Jit Seng Chen, GGY, Canada; Steven Vanduffel, Vrije Universiteit Brussels, Belgium*

#### 11:00-11:25 The Effect of Time Changing Risk Aversion on Equilibrium Pricing

*Traian A. Pirvu, McMaster University, Canada*

#### 11:30-11:55 Equilibrium Asset Pricing with Rational and Irrational Investors

*Jing Guo, Columbia University, USA*

Thursday, November 13

## MS2

### Variable Annuities

10:00 AM-12:00 PM

Room: Adams - 6th Floor

Variable Annuities with embedded guarantees are increasingly popular in many markets across the world. These products combine financial option-like investment features with traditional life insurance. As such, the pricing and risk management of these products present challenging problems that have attracted interest from quantitative researchers from different fields. This minisymposium first offers an overview of various types of investment guarantees, and then covers a number of topical research problems in this area. In particular, the presentations discuss analytical and computational techniques for the valuation, the modeling and hedging of dynamic policyholder behavior, the optimization of guaranteed benefits, and computational methods for risk measures of guaranteed benefits.

#### Organizer: Runhuan Feng

University of Illinois at Urbana-Champaign, USA

#### Organizer: Daniel Bauer

Georgia State University, USA

#### 10:00-10:25 Revisiting the Risk-Neutral Approach to Optimal Policyholder Behavior: a Study of Withdrawal Guarantees in Variable Annuities

Thorsten Moenig, University of St. Thomas, USA; Daniel Bauer, Georgia State University, USA

#### 10:30-10:55 Hedging Costs for Variable Annuities under Regime-Switching

Peter Forsyth, University of Waterloo, Canada

#### 11:00-11:25 Computation of Risk Measures for Variable Annuity Guaranteed Benefits

Runhuan Feng, University of Illinois at Urbana-Champaign, USA; Hans W. Volkmer, University of Wisconsin, Milwaukee, USA

#### 11:30-11:55 Optimal Initiation of a Glwb in a Variable Annuity: No Arbitrage Approach

Huaxiong Huang, Moshe Milevsky, and Tom Salisbury, York University, Canada

Thursday, November 13

## MS3

### Radial Basis Function Based Methods in Finance

10:00 AM-11:30 PM

Room: Grant Park Parlor - 6th Floor

Numerical methods based on radial basis function (RBF) approximation have often been suggested as interesting for computational problems arising in finance because they allow for easy implementation of high-dimensional problems. However, there are also other interesting properties that can be explored. Because the methods are meshfree, they easily allow for local adaptivity. They can be used for evaluating fractional derivatives that arise in jump diffusion problems and Gaussian RBFs can be interpreted as representing statistical uncertainty. In this minisymposium, we will explore a range of financial problems where RBFs have been proven successful in different ways.

#### Organizer: Elisabeth Larsson

Uppsala University, Sweden

#### Organizer: Lina von Sydow

Uppsala University, Sweden

#### 10:00-10:25 Filtering and Parameter Estimation of Partially Observed Diffusion Processes Using Gaussian RBFs

Josef Höök and Elisabeth Larsson, Uppsala University, Sweden; Erik Lindström, Lund University, Sweden; Lina von Sydow, Uppsala University, Sweden

#### 10:30-10:55 Option Pricing under Fractional Diffusion Using Radial Basis Functions

Cecile M. Piret, Université Catholique de Louvain, Belgium

#### 11:00-11:25 Efficient Pricing of Vanilla and Exotic Options with Multiple Discrete Dividends using Finite-difference Method for Algorithmic Trading System

Alexander Toropov, TBricks AB, Sweden and ITMO University, Russia; Dmitry Ivanov, TBricks AB, Sweden; Yuri Shpolyanskiy, TBricks AB, Sweden and ITMO University, Russia

Thursday, November 13

## MS4

### Topics from Derivatives Central Clearing

10:00 AM-12:00 PM

Room: Hancock Parlor - 6th Floor

Efficiently margining derivatives and securities lending portfolios is principally a classic application of short-term market risk measurement. It involves econometrics, pricing, simulation, portfolio risk quantification and managing the model risk of these models. Most relevant phenomena can be observed in historical data. But regulatory guidance and best practice around margins are moving beyond an objective approach and acknowledging heretofore mutualized risks such as the market impact of a liquidation that may emerge only under the circumstances of a fail where little to no historical data is available.

#### Organizer: John A. Dodson

Options Clearing Corporation, USA

#### 10:00-10:25 A Class of Fat-Tailed Residuals for Log>Returns Consistent with Finite Asset Price Expectations

Ziyi Guo, Options Clearing Corporation, USA

#### 10:30-10:55 Principal Components Analysis in Yield-Curve Modeling

Carlos Tolmashy, University of Minnesota, USA

#### 11:00-11:25 Pricing and Hedging of Futures Contracts under Multiple Stochastic Factors

Jinchun Ye, Options Clearing Corporation, USA

#### 11:30-11:55 Quantifying the Mutual Information Between Innovations in the Prices of Security Options and Their Underlyings

Lu Zhou, University of Minnesota, USA

Thursday, November 13

## CP1

### Credit Risk

10:00 AM-12:00 PM

Room:Millenium Parlor - 6th Floor

Chair: Hugo E. Ramirez, The University of Manchester, United Kingdom

### 10:00-10:25 The Application of Kmv Model in Chinese Market

Haoyun Chen, Central University of Finance and Economics, China

### 10:30-10:55 Bank Liquidity Risk Management

Mmboniseni Mulaudzi, University of South Africa, South Africa; Mark Petersen and Janine Mukuddem-Petersen, North-West University, South Africa

### 11:00-11:25 Capital Investment and Liquidity Management with Collateralized Debt

Erwan Pierre, EDF Lab, France; Stephane Villeneuve, Toulouse University, France; Xavier Warin, EDF Lab, France

### 11:30-11:55 Hedge Fund Management with Liquidity Constraint

Hugo E. Ramirez, Peter Duck, Sydney Howell, and Paul Johnson, The University of Manchester, United Kingdom

Thursday, November 13

## CP2

### Econometrics/Empirics

10:00 AM-12:00 PM

Room:LaSalle 5 - 7th Floor

Chair: - Lingjiong Zhu, University of Minnesota, USA

### 10:00-10:25 High-Speed Fourier Method Estimation of Covariances from Asynchronous Data for Real-Time Cluster Analysis

Dieter Hendricks, Tim Gebbie and Diane Wilcox, University of Witwatersrand, South Africa

### 10:30-10:55 Statistically Significant Fits of Hawkes Processes to Financial Data

Mehdi Lallouache and Damien Challet, Ecole Centrale Paris, France

### 11:00-11:25 Regime Change in Dynamic Correlation Matrices of Financial Data

Joongyeub Yeo and George C. Papanicolaou, Stanford University, USA

### 11:30-11:55 Hawkes Processes and Applications in Finance

Lingjiong Zhu, University of Minnesota, USA

Thursday, November 13

## CP3

### Numerical Analysis - Part 1

10:00 AM-12:00 PM

Room:LaSalle 1 - 7th Floor

Chair: Hailing Wu, Nanyang Technological University, Singapore

### 10:00-10:25 Pricing "Partial-Average" Asian Options with Binomial Method

Erwinna Chendra, Institute Technology Bandung and Parahyangan Catholic University, Indonesia; Kuntjoro Adji Sidarto and Dila Puspita, Institute Technology Bandung, Indonesia

### 10:30-10:55 Flexible Finite Element Method for Option Pricing in Lévy Models

Kathrin Glau, Technical University München, Germany

### 11:00-11:25 A Radial Basis Function Partition of Unity Penalty Method for Pricing American Basket Call Options

Victor Shcherbakov and Elisabeth Larsson, Uppsala University, Sweden

### 11:30-11:55 Fredholm Expansions and Pde Methods Applied to Quadratic Functionals of the Ou Process

Hailing Wu and Nicolas Privault, Nanyang Technological University, Singapore



Thursday, November 13

## CP4

### Options - Part 1

10:00 AM-12:00 PM

Room: LaSalle 3 - 7th Floor

Chair: To Be Determined

#### 10:00-10:25 Return-Volatility Correlation Implied by the Asymmetry in Options Trading Activity

Jungwoo Lee, Yonsei University, South Korea

#### 10:30-10:55 A Model Selection Method for Option Pricing

Berk Orbay, Refik Gullu, and Wolfgang Hormann, Bogazici University, Turkey

#### 11:00-11:25 Efficient Computation of Hedge-Sensitivities Via Automatic Differentiation

Juergen T. Topper, University of Hannover, Germany; Thomas Kaminski, FastOpt, Germany; Michael B. Giles, University of Oxford, United Kingdom

#### 11:30-11:55 Holding Period Information in Options Hedging

Antoine E. Zambelli, University of California, Los Angeles, USA

Thursday, November 13

## CP5

### Stochastic Control - Part 1

10:00 AM-12:00 PM

Room: LaSalle 2 - 7th Floor

Chair: Chao Zhu, University of Wisconsin, Milwaukee, USA

#### 10:00-10:25 The Optionality of a Financially Constrained Firm

Mingliang Cheng, Geoffrey Evatt, and Paul V. Johnson, University of Manchester, United Kingdom

#### 10:30-10:55 Leveraged Investments and Agency Conflicts When Prices are Mean Reverting

Kristoffer J. Glover and Gerhard Hambusch, University of Technology, Sydney, Australia

#### 11:00-11:25 An Explicit Formula for the Optimal Government Debt Ceiling

Ricardo Huaman-Aguilar and Abel Cadenillas, University of Alberta, Canada

#### 11:30-11:55 On Linear Programming Approach to Inventory Control Problems

Chao Zhu, University of Wisconsin, Milwaukee, USA

### Lunch Break

12:00 PM-1:25 PM

Attendees on their own

### Welcome Remarks

1:25 PM-1:30 PM

Room: Adams - 6th Floor

Thursday, November 13

## IP1

### No-arbitrage Under Model Ambiguity and Fundamental Theorems of Asset Pricing

1:30 PM-2:15 PM

Room: Adams - 6th Floor

Chair: Christoph Reisinger, Oxford University, United Kingdom

We will present several recent versions of the Fundamental Theorem of Asset Pricing for discrete and continuous time models under model ambiguity, with and without proportional transaction costs. This talk is based on recent collaborations with S. Biagini, K. Kardaras and M. Nutz.

#### Bruno Bouchard

Université Paris-Dauphine and ENSAE-ParisTech, Ceremade and Crest, France

Thursday, November 13

## IP2

### Multi-Period Mean Variance Asset Allocation: Is It Bad To Win the Lottery?

2:15 PM-3:00 PM

Room: Adams - 6th Floor

Chair: Christoph Reisinger, Oxford University, United Kingdom

We present semi-self-financing mean-variance (MV) dynamic asset allocation strategies which are superior to self-financing MV portfolio strategies. Our strategies are built upon a Hamilton-Jacobi-Bellman (HJB) equation approach for the solution of the portfolio allocation problem. Under an HJB framework, our strategies have a simple and intuitive derivation, and can be readily employed in a very general setting, namely continuous or discrete re-balancing, jump-diffusions, and realistic portfolio constraints. MV strategies are often criticized for penalizing the upside as well as the downside. However, under our strategies, the MV portfolio optimization problem can be shown to be equivalent to maximizing the expectation of a well-behaved utility function of the portfolio wealth. We show that, for long term investors, the use of dynamic MV strategies can achieve the same expected value with a much smaller standard deviation compared to a constant proportions strategy.

**Peter Forsyth**

University of Waterloo, Canada

## Coffee Break

3:00 PM-3:30 PM



Room: Monroe - 6th Floor

Thursday, November 13

## MS5

### Advanced Numerical Techniques in Financial Mathematics - Part I of II

3:30 PM-5:30 PM

Room: Adams - 6th Floor

**For Part 2 see MS30**

These two minisymposia aim to discuss advanced numerical techniques for modern applications in financial mathematics. We will encounter efficient versions of Monte Carlo methods, for stochastic local volatility models, and for Credit Valuation Adjustment (CVA). Regarding PDE techniques we will discuss dimension reduction, spectral methods, discontinuous Galerkin, and also a CVA PDE technique under the Heston model. We have Fourier integration for BSDEs and for the so-called VIX Heston model calibration. Latest results for recent topics in computational finance are thus reported.

**Organizer: Cornelis W. Oosterlee**

Centrum voor Wiskunde en Informatica (CWI), Netherlands

**Organizer: Karel In 't Hout**

University of Antwerp, Belgium

**3:30-3:55 The Time-Dependent FX-SABR Model: Efficient Calibration based on Effective Parameters**

Anthonie W. Van der Stoep, Rabobank International and CWI, The Netherlands

**4:00-4:25 The VIX-Heston Model for Asset Liability Management**

Stefan Singor, Ortec-Finance, United Kingdom

**4:30-4:55 Second Order Weak Taylor Scheme and a Numerical Fourier Method for Backward Sdes**

Marjon Ruijter and Kees Oosterlee, CWI, Amsterdam, Netherlands

**5:00-5:25 Credit Valuation Adjustment and the Stochastic Grid Bundling Method**

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

Thursday, November 13

## MS6

### Optimal Stopping with Financial Applications

3:30 PM-5:30 PM

Room: Grant Park Parlor - 6th Floor

This minisymposium presents four talks on optimal single/multiple stopping problems in finance. The problem formulations and solution techniques will be relevant to number of financial applications such as mean-reversion/pairs trading, optimal capital structure, stock loans, and real options.

**Organizer: Tim Leung**

Columbia University, USA

**3:30-3:55 Optimal Multiple Stopping with Random Refraction Times under Levy Models**

Hongzhong Zhang, Columbia University, USA

**4:00-4:25 Sequential Replacement under Uncertainty in the Population Distribution**

Dharma Kwon, University of Illinois at Urbana-Champaign, USA; Steven Lippman, University of California, Los Angeles, USA

**4:30-4:55 Optimal Capital Structure with Scale Effects under Spectrally Negative Levy Models**

Kazutoshi Yamazaki, Kansai University, Japan; Budhi Surya, Bandung Institute of Technology, Indonesia

**5:00-5:25 Optimal Mean Reversion Trading with Transaction Cost & Stop-Loss Exit**

Tim Leung, Columbia University, USA

Thursday, November 13

## MS7

### Optimal Investment with Transaction Costs

3:30 PM-5:30 PM

Room: Hancock Parlor - 6th Floor

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 transaction costs, as well as with more general price impact models. Particular emphasis is placed on the one hand on elegant conditions for robust no arbitrage in the market and on the other hand on asymptotic techniques that allow us to obtain tractable results as transaction costs become small.

#### Organizer: Maxim Bichuch

Worcester Polytechnic Institute, USA

#### 3:30-3:55 Trading with Small Price Impact

Johannes Muhle-Karbe, ETH Zürich, Switzerland

#### 4:00-4:25 Fundamental Theorem of Asset Pricing under Transaction Costs and Model Uncertainty

Erhan Bayraktar, University of Michigan, USA; Yuchong Zhang, University of Michigan, Ann Arbor, USA

#### 4:30-4:55 Balancing Small Fixed and Proportional Transaction Cost in Trading Strategies

Arash Fahim, Florida State University, USA; Jose Alcala, Universidad Jesuita de Guadalajara, Mexico

#### 5:00-5:25 Portfolio Choice with Liquid and Illiquid Assets

Maxim Bichuch, Worcester Polytechnic Institute, USA; Paolo Guasoni, Boston University, USA

Thursday, November 13

## MS8

### Dynamic Risk and Performance Measures and Related Fields - Part I of II

3:30 PM-5:30 PM

Room: Water Tower Parlor - 6th Floor

#### For Part 2 see MS11

The focus of this minisymposium will be on the recent theoretical and practical developments in the areas of risk and performance measures. Specifically, the emphasis will be put on the theory and applications of dynamic risk measures and dynamic performance measures, whose importance and use in financial and insurance industries is unquestionable. The talks will be presented by the following renowned experts in these areas.

#### Organizer: Tomasz Bielecki

Illinois Institute of Technology, USA

#### Organizer: Igor Cialenco

Illinois Institute of Technology, USA

#### Organizer: Marco Maggis

Milano University, Italy

#### Organizer: Antonis Papapantoleon

TU Berlin, Germany

#### 3:30-3:55 Market Making Via Acceptability Indices

Igor Cialenco, Illinois Institute of Technology, USA

#### 4:00-4:25 Price and Risk in Discrete Time Market Models Subject to Model Misspecification

Marco Maggis, Milano University, Italy

#### 4:30-4:55 A Robust Fundamental Theorem of Asset Pricing in Continuous Time

Patrick Cheridito, Princeton University, USA; Michael Kupper and Ludovic Tangpi, Universität Konstanz, Germany

#### 5:00-5:25 Distribution Based Risk Measures and Their Implementation

Stefan Weber, Leibniz Universität Hannover, Germany

Thursday, November 13

## MS9

### Liquidity Risk in a System Context

3:30 PM-5:30 PM

Room: Millenium Parlor - 6th Floor

In today's complex financial systems, liquidity risk and systemic risk cannot be disentangled. We explore how systemic risk emerges from the collective behavior of the market participants that face liquidations constraints. Three viewpoints area taken: a network approach with applications to over-the-counter markets, a price formation model approach in which assets are endogenously correlated in periods of mass liquidations and a mean field games approach.

#### Organizer: Andreea Minca

Cornell University, USA

#### 3:30-3:55 Systemic Risk with Central Counterparty Clearing

Hamed Amini, Swiss Finance Institute, École Polytechnique Fédérale de Lausanne, Switzerland

#### 4:00-4:25 Institutional Investors and the Dependence Structure of Asset Returns

Lakshitha Wagalath, IESEG School of Management, France

#### 4:30-4:55 Welfare Analysis of Dark Pools

Krishnamurthy Iyer, Cornell University, USA; Ramesh Johari, Stanford University, USA; Ciamac C. Moallemi, Columbia University, USA

#### 5:00-5:25 Networks of Overlapping Portfolios: Aggregation and Measures of Vulnerability

Anton Braverman and Andreea Minca, Cornell University, USA

Thursday, November 13

## MS10

### Mean-field Games Modeling in Economy and Finance

3:30 PM-5:00 PM

Room: LaSalle 1 - 7th Floor

This minisymposium will be a continuation of the one submitted on large population stochastic control. It will more specifically focus on mean-field games. Mean-field games theory was introduced in 2006 by Lasry and Lions and by Huang, Caines and Malhamé as a way to describe consensus among population of individuals submitted to cost constraints. Various applications appear in economy, finance and engineering. Speakers of the session will discuss some of these applications by considering several advanced examples of modeling in economy and finance.

#### Organizer: François Delarue

*Université de Nice, Sophia Antipolis, France*

#### 3:30-3:55 On the Connection Between Mean Field Games and Symmetric $N$ -Player Games

*Markus Fischer, University of Padua, Italy*

#### 4:00-4:25 Wealth Distribution and the Business Cycle: The Role of Private Firms

*Yves Achdou, University of Paris VII, France; Jean-Michel Lasry, University of Paris, Dauphine, France; Pierre-Louis Lions, Collège de France, France; Benjamin Moll, Princeton University, USA*

#### 4:30-4:55 Mean Field Games with Major and Minor Players

*Geoffrey Zhu, Princeton University, USA*

Thursday, November 13

## CP6

### Fixed Income

3:30 PM-5:30 PM

Room: LaSalle 2 - 7th Floor

*Chair: Claudio Fontana, Université Paris-Diderot, France*

#### 3:30-3:55 A General HJM Framework for Multiple Curve Modeling

*Claudio Fontana, Université Paris-Diderot, France; Christa Cuchiero, University of Vienna, Austria; Alessandro Gnoatto, Ludwig-Maximilians-Universität München, Germany*

#### 4:00-4:25 Interest Rate Derivative Pricing with Counterparty Risk and Funding Costs: A Lévy CVA Multiple-curve Model

*Zorana Grbac, Université Paris-Diderot, France; Stéphane Crépey and Nathalie Ngor, University of Evry-Val-d'Essonne, France; David Skovmand, Copenhagen Business School, Denmark*

#### 4:30-4:55 Laplace Transform and Hypergeometric Functions Methods: a Unified Approach for Some Interest Rate Models

*Dmitry Muravey, FM Investment Management, United Kingdom and ILQF HSE, Russia*

#### 5:00-5:25 Bond Pricing under Regime Switching among Multiple Short Rate Models

*Keiichi Tanaka, Tokyo Metropolitan University, Japan*

Thursday, November 13

## CP7

### Options - Part 2

3:30 PM-5:30 PM

Room: LaSalle 3 - 7th Floor

*Chair: Hongzhong Zhang, Columbia University, USA*

#### 3:30-3:55 Pricing and Hedging Exotic Options with Transaction Cost under Jump-Diffusion Process

*Waseem A. Khan, Sukkur Institute of Business Administration, Pakistan; Mohammad Rasras and Abdul Khaliq, Middle Tennessee State University, USA; Mohammad Yousuf, King Fahd University of Petroleum and Minerals, Saudi Arabia*

#### 4:00-4:25 Convergence of Monte-Carlo Computation on Various Exotic Options

*Qingshuo Song, City University of Hong Kong, Hong Kong*

#### 4:30-4:55 Gaussian Markov Processes and Option Pricing Theory

*Mackenzie Wildman, Vladimir Dobric, and Daniel Conus, Lehigh University, USA*

#### 5:00-5:25 Optimal Multiple Stopping with Negative Discount Rate and Random Refraction Times under Lévy Models

*Tim Leung, Columbia University, USA; Kazutoshi Yamazaki, Kansai University, Japan; Hongzhong Zhang, Columbia University, USA*

Thursday, November 13

## CP8

### Systemic Risk

3:30 PM-5:30 PM

Room: LaSalle 5 - 7th Floor

Chair: Yuanying Guan, Indiana University, USA

### 3:30-3:55 Systemic Risk with Jump-Diffusion Processes

Yi-Tai Chiu and Jean-Pierre Fouque,  
University of California, Santa Barbara,  
USA

### 4:00-4:25 Dynamics of Trust in Networks and Systemic Risk

Joao Da Gama Batista, Ecole Centrale Paris, France; Jean-Philippe Bouchaud, Capital Fund Management, France; Damien Challet, Ecole Centrale Paris, France

### 4:30-4:55 Optimal Capital Reserve Strategies for a Bank and Its Regulator

Geoff Evatt, University of Manchester, United Kingdom

### 5:00-5:25 Financial Contagion with Heterogeneous Link-Weight Distributions

Yuanying Guan and Micah Pollak, Indiana University, USA

## Intermission

5:30 PM-5:45 PM

Thursday, November 13

## IP3

### Bid-Ask Imbalance and Trade Arrival Modeling

5:45 PM-6:30 PM

Room: Adams - 6th Floor

Chair: Sebastian Jaimungal, University of Toronto, Canada

We consider the dynamics of trade arrivals and best bid and ask order sizes in an electronic limit order book. The joint evolution of these events is described by a three-dimensional diffusion model. We show how to construct semi-analytical solutions for the probability of price movement prior to the arrival of an aggressive market order. Finally, we calibrate the model to empirical limit order book data and discuss how it can be used to optimize order execution at the tactical level.

### Michael Sotiropoulos

Bank of America Merrill Lynch, USA

## Welcome Reception

6:30 PM-8:30 PM

Room: Monroe - 6th Floor



## Friday, November 14

### Registration

8:00 AM-3:30 PM

Room: Registration Counter - 6th Floor

Friday, November 14

## MS11

### Dynamic Risk and Performance Measures and Related Fields - Part II of II

8:30 AM-10:30 AM

*Room: Water Tower Parlor - 6th Floor*

#### For Part 1 see MS8

The focus of this minisymposium will be on the recent theoretical and practical developments in the areas of risk and performance measures. Specifically, the emphasis will be put on the theory and applications of dynamic risk measures and dynamic performance measures, whose importance and use in financial and insurance industries is unquestionable. The talks will be presented by the following renowned experts in these areas.

#### Organizer: Tomasz Bielecki

*Illinois Institute of Technology, USA*

#### Organizer: Igor Cialenco

*Illinois Institute of Technology, USA*

#### Organizer: Marco Maggis

*Milano University, Italy*

#### Organizer: Antonis Papapantoleon

*TU Berlin, Germany*

#### 8:30-8:55 A Fourier Approach to the Computation of Risk Measures

*Antonis Papapantoleon, TU Berlin, Germany*

#### 9:00-9:25 On the Model-free Hedging Duality

*Michael Kupper, Universität Konstanz, Germany*

#### 9:30-9:55 Correspondence Between Dynamic Quasi Concave Performance Measures and Parametric Families of Dynamic Risk Measures

*Jocelyne Bion-Nadal, CMAP, Ecole Polytechnique, France*

#### 10:00-10:25 A Recursive Algorithm for Dynamic Multivariate Risk Measures and a Set-Valued Bellman's Principle

*Birgit Rudolff, Princeton University, USA; Zachary Feinstein, Washington University in St. Louis, USA*

Friday, November 14

## MS12

### Mean Field Games - Part I of II

8:30 AM-10:30 AM

*Room: Adams - 6th Floor*

#### For Part 2 see MS32

Recent developments in the theory and applications of Mean Field Games (MFG)

#### Organizer: Rene Carmona

*Princeton University, USA*

#### 8:30-8:55 The Master Equation of Mean Field Games and Controlled McKean Vlasov Dynamics

*Rene Carmona, Princeton University, USA*

#### 9:00-9:25 Coalescence of Hysteresis in a Large Population: Mean Field Stackelberg Games

*S.C.P Yam, The Chinese University of Hong Kong, Hong Kong*

#### 9:30-9:55 Mean Field Games with Congestion

*Diogo Gomes, King Abdullah University of Science & Technology (KAUST), Saudi Arabia*

#### 10:00-10:25 Linear-Quadratic Optimal Control Problems for Mean-Field Stochastic Differential Equations --- Time-Consistent Solutions

*Jiongmin Yong, University of Central Florida, USA*

Friday, November 14

## MS13

### Recent Progress in Equilibrium Theory

8:30 AM-10:30 AM

*Room: LaSalle 1 - 7th Floor*

This minisymposium focuses on recent developments in equilibrium models with multiple interacting agents. Special emphasis is placed on models with market incompleteness, price impact, and relative preference. These problems are important in economics and have also gain significant interest in math finance community. Some of these problems are mathematically tremendously complex and have remained almost untouched for two decades. Several progresses have been made in recent years by speakers in this minisymposium, using similar mathematical tools: analysis of systems of PDE/BSDE with nonlinearity in first order terms. These results also help to study several long standing open problems in BSDEs.

#### Organizer: Hao Xing

*London School of Economics and Political Science, United Kingdom*

#### 8:30-8:55 Various Aspects of Incomplete Equilibrium Theory

*Kasper Larsen, Carnegie Mellon University, USA*

#### 9:00-9:25 Existence of Close to Pareto Optimal Incomplete Radner Equilibrium

*Hao Xing and Kostas Kardaras, London School of Economics and Political Science, United Kingdom; Gordan Zitkovic, University of Texas at Austin, USA*

#### 9:30-9:55 Finding Local Equilibria by Splitting Multidimensional BSDEs

*Christoph Frei, University of Alberta, Canada*

#### 10:00-10:25 Quadratic BSDEs Arising from a Price Impact Model with Exponential Utility

*Sergio Pulido, EPFL, Switzerland; Dmitry Kramkov, Carnegie Mellon University, USA*

Friday, November 14

## MS14

### Counterparty Risk, Liquidity and Funding - Part I of II

8:30 AM-10:30 AM

Room: Grant Park Parlor - 6th Floor

#### For Part 2 see MS34

The importance and complexity of the counterparty credit risk (CCR) and funding biases has been brought to the forefront of financial risk management by the developments surrounding the credit crisis 2008-2010. This led to explosion of research work that was devoted to theoretical and practical aspects of the CCR and multiple funding curves, and their relation to the systemic risk. This minisymposium will focus on presentation of the recent developments in this area, presented by the leading researchers from academia and from financial industry.

#### Organizer: Tomasz Bielecki

Illinois Institute of Technology, USA

#### Organizer: Igor Cialenco

Illinois Institute of Technology, USA

#### Organizer: Stephane C. Crepey

Evry University, France

#### 8:30-8:55 Valuation and Hedging of Contracts with Funding Costs and Collateralization

Marek Rutkowski, University of Sydney, Australia; Tomasz Bielecki, Illinois Institute of Technology, USA

#### 9:00-9:25 Underexposed Risk Snapshots - The Dangers of Risk-Neutral Exposures

Harvey Stein, Bloomberg LP, USA

#### 9:30-9:55 Dynamic Replication Strategies under Funding and Collateral Costs

Stephan Sturm, Worcester Polytechnic Institute, USA; Agostino Capponi, Johns Hopkins University, USA

#### 10:00-10:25 Efficient Options Pricing under Levy Processes with CVA and FVA

Justin Shek, Bank of China International, Hong Kong; Sergei Levendorskii, University of Leicester, United Kingdom

Friday, November 14

## MS15

### Systemic and Liquidity Risk

8:30 AM-10:30 AM

Room: Hancock Parlor - 6th Floor

Systemic and liquidity risk have been at the heart of policy debates aiming at stabilizing the financial system. The intricate nature of linkages connecting economic sectors can cause wide propagation of shocks throughout the system, and generate large number of default related losses. This session aims at presenting recent developments by leading experts. The talks will illustrate the effect of preventive policies, such as those enforcing capital-to-asset ratio constraints, on asset prices. They will discuss how contagion effects may arise through balance sheet linkages, and illustrate how systematic effects may generate large losses in heterogeneous portfolios. Signal processing techniques will be introduced to analyze the impulse response of economic variables to fundamental shocks.

#### Organizer: Agostino Capponi

Johns Hopkins University, USA

#### 8:30-8:55 Price Contagion Through Balance Sheet Linkages

Agostino Capponi, Johns Hopkins University, USA; Martin Larsson, Cornell University, USA

#### 9:00-9:25 A Structural Model for Asset Price Contagion and Systemic Risk

Ciamac C. Moallemi, Columbia University, USA; Chen Chen, University of California, Berkeley, USA; Garud Iyengar, Columbia University, USA

#### 9:30-9:55 Systemic Risk and the Macroeconomy: An Empirical Evaluation

Stefano Giglio and Bryan Kelly, The University of Chicago, USA; Seth Pruitt, Arizona State University, USA

#### 10:00-10:25 Large Portfolio Asymptotics and Fluctuation Analysis for Losses from Default

Konstantinos Spiliopoulos, Brown University, USA

Friday, November 14

## MS16

### Asymptotic Methods in Continuous-Time Models with Jumps

8:30 AM-10:30 AM

Room: LaSalle 2 - 7th Floor

Asymptotic methods have become some of the most useful tools in mathematical finance. The applications are many, ranging from high-frequency nonparametric methods to short-time characterizations of option prices, and more. These methods are particularly crucial to deal with models with jumps due to the lack of tractable formulas and efficient computational/statistical methods for option prices, distributions, and volatility/covariance estimators. The minisymposium brings together leading researchers to present recent advances in selected problems of financial mathematics in which asymptotic methods are critical for their solutions.

#### Organizer: Jose E. Figueroa-Lopez

Purdue University, USA

#### 8:30-8:55 Optimally Thresholded Realized Power Variations for Levy Jump Diffusion Models

Jose E. Figueroa-Lopez and Jeff Nisen, Purdue University, USA

#### 9:00-9:25 Convergence Rate of the Truncated Realized Covariance When Prices Have Infinite Variation Jumps

Cecilia Mancini, University of Florence, Italy

#### 9:30-9:55 Short-Time Expansions for Close-to-the-Money Options under a Levy Jump Model with Stochastic Volatility

Sveinn O. Olafsson, Purdue University, USA

#### 10:00-10:25 Asymptotic Methods for Portfolio Risk Management

Peter Tankov, Université Paris-Diderot, France

Friday, November 14

## CP9

### High-Frequency Markets

8:30 AM-10:30 AM

Room: Millenium Parlor - 6th Floor

Chair: Amirhossein Sadoghi, Frankfurt School of Finance and Management, Germany and Linköping University, Sweden

#### 8:30-8:55 Optimal Liquidation in Limit Order Books under General Uncertainties

James Blair, Paul V. Johnson, and Peter Duck, University of Manchester, United Kingdom

#### 9:00-9:25 Long-Run Price Dynamics under a Level-1 Lob with Memory and Variable Spread

Jonathan A. Chávez Casillas and José Figueroa-López, Purdue University, USA

#### 9:30-9:55 A Stochastic Free Boundary Problem and Limit Order Book Model

Marvin Mueller, TU Dresden and TU Berlin, Germany; Martin Keller-Ressel, TU Dresden, Germany

#### 10:00-10:25 Optimum Strategy in Market Order Execution Associated with the Poisson Cluster Process

Amirhossein Sadoghi, Frankfurt School of Finance and Management, Germany and Linköping University, Sweden; Jan Vecer, Columbia University, USA

Friday, November 14

## CP10

### Risk Measures

8:30 AM-10:30 AM

Room: LaSalle 3 - 7th Floor

Chair: Dan Ren, University of Dayton, USA

#### 8:30-8:55 Set-valued Shortfall Risk Measures for Multi-asset Markets

Cagin Ararat and Birgit Rudloff, Princeton University, USA; Andreas Hamel, Free University of Bolzen-Bolzano, Italy

#### 9:00-9:25 Dynamic Optimal Portfolio Choices for Robust Preferences

Jingshu Liu and Marcel Rindisbacher, Boston University, USA

#### 9:30-9:55 Classical Differentiability of Bsvies and Dynamic Capital Allocations

Ludger Overbeck, University of Giessen, Germany

#### 10:00-10:25 Shortfall Aversion

Paolo Guasoni, Boston University, USA; Gur Huberman, Columbia Business School, USA; Dan Ren, University of Dayton, USA

Friday, November 14

## CP11

### Stochastic Volatility - Part 1

8:30 AM-10:00 AM

Room: LaSalle 5 - 7th Floor

Chair: Yeliz Yolcu Okur, Middle East Technical University, Turkey

#### 8:30-8:55 A Fast Calibrating Volatility Model for Option Pricing

Paresh Date, Brunel University, United Kingdom

#### 9:00-9:25 The Small Maturity Implied Volatility Slope for Levy Models

Stefan Gerhold, Technische Universität Wien, Germany; Ismail Gülüm, TU Wien, Austria

#### 9:30-9:55 Computation of the Delta of European Options under Stochastic Volatility Models

Yeliz Yolcu Okur, Bilgi Yilmaz, and Alper Inkaya, Middle East Technical University, Turkey; Tilman Sayer, Fraunhofer Institute for Industrial Mathematics, Germany

#### 10:00-10:25 Tax-Aware Dynamic Asset Allocation

Martin B. Haugh, Garud N. Iyengar, and Chun Wang, Columbia University, USA

### Coffee Break

10:30 AM-10:55 AM



Room: Monroe - 6th Floor



Friday, November 14

**Announcements**

10:55 AM-11:00 AM

Room:Adams - 6th Floor

**IP4****Robust Meets Realistic:  
Interpolating Between  
Model-Specific and Model-  
Free Settings for Pricing and  
Hedging**

11:00 AM-11:45 AM

Room:Adams - 6th Floor

Chair: Ronnie Sircar, Princeton University, USA

Classical models in mathematical finance, even if highly complex, typically share important methodological weaknesses: failure to account for model uncertainty and failure to incorporate market information in a consistent manner. In the wake of financial crisis these have been much debated. In response, an increasingly active field of research focuses on model-free super/sub-hedging using the underlying and Vanilla options. Explicit results often rely on pathwise inequalities and embedding techniques while pricing-hedging duality is obtained using martingale optimal transport methods. However, the resulting prices and hedges are often too expensive to be practically relevant. In this talk I show how to interpolate between the two worlds. I argue that quoted option prices should be incorporated through distributional constraints while beliefs, or past data, are most naturally included through pathwise restrictions. The resulting framework is robust and flexible. It allows for realistic outputs while quantifying the impact of making assumptions. I will present abstract results about pricing-hedging duality and then discuss examples of restrictions on future realised volatility and future option prices. Based on joint works with Sergey Nadtochiy (University of Michigan) and Zhaoxu Hou and Peter Spoida (University of Oxford).

**Jan Obloj**

Oxford University, United Kingdom

Friday, November 14

**IP5****Long-Term Valuation and  
Misspecified Recovery**

11:45 AM-12:30 PM

Room:Adams - 6th Floor

Chair: Ronnie Sircar, Princeton University, USA

Asset prices contain information about the probability distribution of future states and the stochastic discounting of those states. The stochastic discounting encodes market prices for the exposure of cash flows to uncertainty at alternative investment horizons. We represent asset valuation as a semigroup of valuation operators indexed by the investment horizon. This approach allows us to apply a generalization of Perron-Frobenius theory to characterize asset valuation. We use this theory to extract a martingale component to a stochastic discount factor process that reveals the durable contributions to risk pricing. The martingale induces a change of measure that is useful in understanding the determinants to valuation. It reflects long-term uncertainty in the underlying macroeconomy and investor concerns about future growth prospects. We describe methods for quantifying the importance of this martingale component. Other researchers have assumed this component to be degenerate, but we show that this assumption may result in the misspecified recovery of investor beliefs.

**Lars Peter Hansen**

The University of Chicago, USA

**Lunch Break**

12:30 PM-2:00 PM

Attendees on their own

Friday, November 14

**SP1****SIAG/FME Junior Scientist  
Prize Lecture: Some Financial  
Markets with Discontinuities**

2:00 PM-2:30 PM

Room:Adams - 6th Floor

Chair: To Be Determined

We shall discuss some systems of stochastic differential equations with discontinuous and degenerate diffusion coefficients with applications to stochastic portfolio management. The underlying model is tailor-made for the financial systems with sudden changes. Allowing discontinuity in the description of the system increases the range of phenomena which might induce financial crisis. We examine long-time behaviors, ergodicity and invariant distribution of large financial markets, discuss some applications of Transportation Cost Information inequalities to portfolio comparisons, and propose some optimization problems.

**Tomoyuki Ichiba**

University of California, Santa Barbara, USA

**Coffee Break**

2:30 PM-3:00 PM

Room:Monroe - 6th Floor



Friday, November 14

## MS17

### Large Population Stochastic Control

3:00 PM-5:00 PM

Room: LaSalle 1 - 7th Floor

Large population stochastic control addresses the question of equilibria within population of interacting agents or particles subject to cost or energy constraints. This research field has been growing fast for the last decade, motivated by various applications in engineering, economy, finance or social sciences. According to the nature of the equilibria dictated by the modeling, it may refer to the mean-field game theory or to the control theory of McKean-Vlasov diffusion processes. Speakers will discuss some of the nowadays challenges, such as: theoretical results about existence and uniqueness of the equilibria, numerical results about the approximation of the equilibria and practical use in modeling.

**Organizer: François Delarue**

*Université de Nice, Sophia Antipolis, France*

#### 3:00-3:25 Uniqueness of Random Equilibria in Large Population Stochastic Control

*François Delarue, Université de Nice, Sophia Antipolis, France*

#### 3:30-3:55 Mean Field Games Systems with Local Coupling

*Jameson Graber, ENSTA ParisTech, France; Pierre Cardaliaguet, University of Paris, Dauphine, France*

#### 4:00-4:25 Bertrand & Cournot Mean Field Games

*Patrick Chan, Princeton, NJ, USA*

#### 4:30-4:55 On a Boltzmann Type Price Formation Model

*Marie-Therese Wolfram, Johann Radon Institute for Computational and Applied Mathematics, Austria; Martin Burger, University of Muenster, Germany; Luis Caffarelli, University of Texas at Austin, USA; Peter Markowich, University of Cambridge, United Kingdom*

Friday, November 14

## MS18

### Statistical Analysis of Risk and Stress Tests for Regulatory Policies - Part I of II

3:00 PM-5:00 PM

Room: Grant Park Parlor - 6th Floor

**For Part 2 see MS33**

The Basel accords have suggested that VaR be the standard for measuring risk to financial institutions. Specifically, banks are required to keep regulatory capital sufficient to cover losses up to a prescribed quantile in their loss distributions. However, VaR continues to be the measurement of risk even though it has been shown to not encourage diversification in portfolio management. These talks will address various aspects of the regulatory system, such as measurement of risk, systemic risk factors, and statistical analysis of the financial data.

**Organizer: Andrew Papanicolaou**

*University of Sydney, Australia*

**Organizer: Igor Cialenco**

*Illinois Institute of Technology, USA*

#### 3:00-3:25 Risk Measures for Financial Networks

*Zachary Feinstein, Washington University in St. Louis, USA*

#### 3:30-3:55 Stochastic Intensity Models of Wrong Way Risk: Wrong Way CVA Need Not Exceed Independent CVA

*Samim Ghamami, Federal Reserve Bank, USA*

#### 4:00-4:25 The Systemic Effects of Benchmarking

*Gustavo Schwenkler, Diogo Duarte, and Keith Lee, Boston University, USA*

#### 4:30-4:55 Likelihood Inference for Large Financial Systems

*Justin Sirignano, Stanford University, USA; Gustavo Schwenkler, Boston University, USA; Kay Giesecke, Stanford University, USA*

Friday, November 14

## MS19

### Spectral and Transform Methods in Finance - Part I of II

3:00 PM-5:00 PM

Room: Hancock Parlor - 6th Floor

**For Part 2 see MS26**

Spectral and Transform methods play a very important role in Mathematical Finance. This session focuses on recent theoretical advances in these methods as well as their applications to modeling and derivative pricing in a variety of markets, including interest rates, credit, electricity and commodities.

**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 On Additive Subordination with an Application in Cross Commodity Modeling

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

#### 3:30-3:55 Modeling Electricity Prices: A Time Change Approach

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

#### 4:00-4:25 Ghost Calibration and Pricing Barrier Options and CDSs in Spectrally One-Sided Lévy Models: the Parabolic Laplace Inversion Method

*Sergei Levendorskii, University of Leicester, United Kingdom*

#### 4:30-4:55 Barrier Options, CDS and Quanto CDS in Lévy Models with Stochastic Interest Rate

*Svetlana Boyarchenko, University of Texas at Austin, USA; Sergei Levendorskii, University of Leicester, United Kingdom*

Friday, November 14

**MS20****Robust Hedging and Pricing under Model Uncertainty - Part I of II**

3:00 PM-5:00 PM

*Room:Adams - 6th Floor***For Part 2 see MS27**

Pricing and hedging under a given model are always subject to the risk of model misspecification. How to price and hedge in a robust manner is therefore of great interest. Based on Skorokhod's embedding, classical methods in this direction rely directly on market data (such as quotes of liquidly traded options), instead of any calibrated model. With the aid of new techniques, including quasi-sure analysis, theory of optimal transport, and stochastic control, we will present new directions toward model-independent pricing, risk measuring, as well as their implications to the lifetime ruin problem.

**Organizer: Arash Fahim***Florida State University, USA***Organizer: Yu-Jui Huang***Dublin City University, Ireland***3:00-3:25 Model Uncertainty and Its Impact on the Pricing of Derivative Instruments***Rama Cont, Imperial College of London, United Kingdom***3:30-3:55 Model Uncertainty and Optimal Transport***Marcel Nutz, Columbia University, USA***4:00-4:25 Martingale Optimal Transport in the Skorokhod Space***Yan Dolinsky, Hebrew University of Jerusalem, Israel; Mete Soner, ETH Zürich, Switzerland***4:30-4:55 On Arbitrage and Duality under Model Uncertainty and Portfolio Constraints***Zhou Zhou, University of Michigan, Ann Arbor, USA; Erhan Bayraktar, University of Michigan, USA*

Friday, November 14

**MS21****Systemic Financial Risk**

3:00 PM-5:00 PM

*Room:Millenium Parlor - 6th Floor*

The Great Financial Crisis of 2007-09 highlights the need to better understand the behavior of risk in the financial system. This minisymposium will feature talks by advanced graduate students, Postdocs, junior and mid-career faculty from the US and Asia. It is hoped that the talks stimulate further discussion in this important area, and that the talks generate interest in students to take up work in this area.

**Organizer: Kay Giesecke***Stanford University, USA***Organizer: Nan Chen***The Chinese University of Hong Kong, Hong Kong***3:00-3:25 Interconnected Balance Sheets, Market Liquidity, and the Amplification Effects in a Financial System***Nan Chen, The Chinese University of Hong Kong, Hong Kong***3:30-3:55 Rehypothecation and Systemic Risk***Alex Shkolnik, Stanford University, USA***4:00-4:25 Information Contagion in Financial Networks***Jennifer La'O, Columbia University, USA; Alireza Tahbaz-Salehi, Columbia Business School, USA***4:30-4:55 Efficient Risk Analysis for Mortgage Pools and Mortgage-backed Securities***Justin Sirignano and Kay Giesecke, Stanford University, USA*

Friday, November 14

**MS22****Operator Splitting Methods for Pricing Options**

3:00 PM-5:00 PM

*Room:LaSalle 2 - 7th Floor*

Pricing and hedging European and American options under a jump-diffusion framework requires solving either a parabolic PDE/PIDE or a linear complementarity problem, both with the same jump-diffusion operator. Usually this is computationally expensive. An operator splitting method addresses this by reducing the multi-dimensional solution to a sequence of the lower dimensional ones. For instance, for jump-diffusion models splitting is used to decompose the entire operator into the local and global parts. Either of them could be further directionally decomposed as well. This mini symposium aims to discuss modern results in this area.

**Organizer: Andrey Itkin***New York University, USA***Organizer: Jari Toivanen***Stanford University, USA***3:00-3:25 High-Order Splitting Methods for Forward PDEs and PIDEs***Andrey Itkin, New York University, USA***3:30-3:55 Convergence of ADI Schemes for Two-dimensional Convection-diffusion Equations with Mixed Derivative Term***Karel In 't Hout and Maarten Wyns, University of Antwerp, Belgium***4:00-4:25 Efficient Implicit Predictor-Corrector Methods for Pricing American Options under Regime Switching***Abdul M. Khaliq, Middle Tennessee State University, USA; Mohammad Yousuf, King Fahd University of Petroleum and Minerals, Saudi Arabia; Ruihua Liu, University of Dayton, USA***4:30-4:55 Pricing Options under Stochastic Volatility Models with Jumps***Jari Toivanen, Stanford University, USA; Santtu Salmi, University of Jyväskylä, Finland; Lina von Sydow, Uppsala University, Sweden*

Friday, November 14

## MS23

### Algorithmic Trading - Part I of II

3:00 PM-5:00 PM

Room: Water Tower Parlor - 6th Floor

#### For Part 2 see MS25

In modern electronic markets nearly all trading is executed using an algorithm and a great deal of these algorithms rely on sophisticated mathematical models. This minisymposium brings together some of the cutting edge research papers which explore different topics including: optimal execution, adverse selection, market making, trading with information, LOB dynamics and other aspects of order flow information.

#### Organizer: Alvaro Cartea

University College London, United Kingdom

#### 3:00-3:25 Simulating and Analyzing Order Book Data: The Queue-Reactive Model

Mathieu Rosenbaum, CMAP, Ecole Polytechnique, France

#### 3:30-3:55 When Option Pricing Meets Optimal Execution

Olivier Guéant, Université Paris-Diderot, France

#### 4:00-4:25 Algorithmic Trading with Learning

Damir Kinzebulatov, The Fields Institute, Toronto, Canada

#### 4:30-4:55 Title Not Available at Time of Publication

Sasha F. Stoikov, Cornell University, USA

Friday, November 14

## CP12

### Commodities

3:00 PM-5:00 PM

Room: LaSalle 3 - 7th Floor

Chair: Nina Lange, Copenhagen Business School, Denmark

#### 3:00-3:25 Hedging of Quantity Risk in Energy Markets

Nina Lange, Copenhagen Business School, Denmark; Fred Espen Benth, University of Oslo, Norway

#### 3:30-3:55 Optimal Writing of American Call Options on Electricity with Physical Delivery: A Free Boundary Analysis of Optimal Entry

Jan Palczewski, University of Leeds, United Kingdom; John Moriarty, University of Manchester, United Kingdom

#### 4:00-4:25 Enhancement of Practice-Based Methods for the Real Option Management of Commodity Storage Assets

Nicola Secomandi, Carnegie Mellon University, USA

#### 4:30-4:55 Modeling Risks in Climate Change by Real Option Analysis

Shuhua Zhang, Tianjin University of Finance and Economics, China

Friday, November 14

## CP13

### Numerical Analysis - Part 2

3:00 PM-5:00 PM

Room: LaSalle 5 - 7th Floor

Chair: Abass Sagna, Evry University, France

#### 3:00-3:25 A Grid Based Optimization Algorithm to Select Intertwined Markets That Maximize Trading Returns

Athula D. Gunawardena and William Dougan, University of Wisconsin, Whitewater, USA; Patrick Monaghan, Blackthorne Capital Management, LLC., USA

#### 3:30-3:55 A Second Order Discretization Scheme for the Extended Cox-Ingersoll-Ross Process

Chulmin Kang, National Institute for Mathematical Sciences, Korea

#### 4:00-4:25 Radial Basis Functions Generated Finite Differences (RBF-FD) for Solving High-Dimensional PDEs in Finance

Slobodan Milovanovic and Lina von Sydow, Uppsala University, Sweden

#### 4:30-4:55 Marginal Quantization of An Euler Diffusion Process and Its Application to Finance

Abass Sagna, Evry University, France; Gilles Pagès, Université Paris 6, France

### Intermission

5:00 PM-5:15 PM

### SIAG/FME Business Meeting

5:15 PM-6:00 PM

Room: Adams - 6th Floor



Complimentary beer and wine will be served.

## Saturday, November 15

### Registration

8:00 AM-4:30 PM

Room: Registration Counter - 6th Floor

### MS24

#### Statistical Inference for Continuous-time Models of Asset Prices

8:30 AM-10:30 AM

Room: Grant Park Parlor - 6th Floor

Continuous-time stochastic processes are widely used in finance and economics. They describe the time-series behavior of asset prices, interest and foreign exchange rates, commodity and energy prices, default rates, and other economic factors. In spite of their popularity, statistical inference is often challenging. This minisymposium will present new developments in the field of statistical inference for continuous-time models in finance. Our goal is to give researchers from different fields an opportunity to discuss new approaches and techniques.

#### Organizer: Gustavo Schwenkler

Boston University, USA

#### Organizer: Kay Giesecke

Stanford University, USA

#### 8:30-8:55 Simulated Likelihood Estimators for Discretely Observed Jump-Diffusions

Kay Giesecke, Stanford University, USA;  
Gustavo Schwenkler, Boston University, USA

#### 9:00-9:25 Assessment of Uncertainty in High Frequency Data: The Observed Asymptotic Variance

Per Mykland, The University of Chicago, USA; Lan Zhang, University of Illinois at Chicago, USA

#### 9:30-9:55 Parametric Inference and Dynamic State Recovery from Option Panels

Torben G. Andersen, Northwestern University, USA

#### 10:00-10:25 Nonparametric Tests for Constant Betas in Jump-Diffusions

Viktor Todorov, Northwestern University, USA

Saturday, November 15

### MS25

#### Algorithmic Trading - Part II of II

8:30 AM-10:30 AM

Room: Water Tower Parlor - 6th Floor

#### For Part 1 see MS23

In modern electronic markets nearly all trading is executed using an algorithm and a great deal of these algorithms rely on sophisticated mathematical models. This minisymposium brings together some of the cutting edge research papers which explore different topics including: optimal execution, adverse selection, market making, trading with information, LOB dynamics and other aspects of order flow information.

#### Organizer: Alvaro Cartea

University College London, United Kingdom

#### 8:30-8:55 Volume Imbalance and Algorithmic Trading

Ryan Donnelly, University of Toronto, Canada

#### 9:00-9:25 Optimal Execution and Order Flow Imbalance

Michael Ludkovski, University of California, Santa Barbara, USA; Kyle Bechler, University of California, Santa Barbara, USA

#### 9:30-9:55 The Self-Financing Condition for High Frequency Trading

Rene Carmona, Princeton University, USA; Kevin Webster, Independent Researcher

#### 10:00-10:25 Robust Market Making

Alvaro Cartea, University College London, United Kingdom

Saturday, November 15

### MS26

#### Spectral and Transform Methods in Finance - Part II of II

8:30 AM-10:30 AM

Room: Millennium Parlor - 6th Floor

#### For Part 1 see MS19

Spectral and Transform methods play a very important role in Mathematical Finance. This session focuses on recent theoretical advances in these methods as well as their applications to modeling and derivative pricing in a variety of markets, including interest rates, credit, electricity and commodities.

#### Organizer: Rafael Mendoza-Arriaga

University of Texas at Austin, USA

#### Organizer: Lingfei Li

The Chinese University of Hong Kong, Hong Kong

#### 8:30-8:55 A Martingale Approach to Long Term Risk and Ross Recovery: Theory

Vadim Linetsky, Northwestern University, USA

#### 9:00-9:25 A Martingale Approach to Long Term Risk and Ross Recovery: Examples

Likuan Qin and Vadim Linetsky, Northwestern University, USA

#### 9:30-9:55 Sticky Reflecting Ornstein-Uhlenbeck Processes and Interest Rate Modeling with Zero Lower Bound

Yutian Nie, Northwestern State University, USA; Vadim Linetsky, Northwestern University, USA

#### 10:00-10:25 A Class of Distributions with Analytic Characteristic Functions

Liming Feng, University of Illinois at Urbana-Champaign, USA

Saturday, November 15

## MS27

### Robust Hedging and Pricing under Model Uncertainty - Part II of II

8:30 AM-10:30 AM

Room: LaSalle 1 - 7th Floor

#### For Part I see MS20

Pricing and hedging under a given model are always subject to the risk of model misspecification. How to price and hedge in a robust manner is therefore of great interest. Based on Skorokhod's embedding, classical methods in this direction rely directly on market data (such as quotes of liquidly traded options), instead of any calibrated model. With the aid of new techniques, including quasi-sure analysis, theory of optimal transport, and stochastic control, we will present new directions toward model-independent pricing, risk measuring, as well as their implications to the lifetime ruin problem.

#### Organizer: Arash Fahim

Florida State University, USA

#### Organizer: Yu-Jui Huang

Dublin City University, Ireland

#### 8:30-8:55 Optimal Transport and Skorokhod Embedding

Mathias Beiglböck, University of Vienna, Austria

#### 9:00-9:25 Model-Independent Hedging under Portfolio Constraints

Arash Fahim, Florida State University, USA; Yu-Jui Huang and Yu-Jui Huang, Dublin City University, Ireland

#### 9:30-9:55 Quantile Hedging in a Semi-Static Market with Model Uncertainty

Gu Wang and Erhan Bayraktar, University of Michigan, USA

#### 10:00-10:25 Minimizing the Probability of Lifetime Ruin Under Ambiguity Aversion

Yuchong Zhang, University of Michigan, Ann Arbor, USA; Erhan Bayraktar, University of Michigan, USA

Saturday, November 15

## MS28

### Monte Carlo Methods in Finance

8:30 AM-10:30 AM

Room: Hancock Parlor - 6th Floor

The minisymposium will explore new directions and developments in Monte Carlo techniques in financial mathematics, especially in the context of stochastic control and sensitivity analysis.

#### Organizer: Michael Ludkovski

University of California, Santa Barbara, USA

#### 8:30-8:55 Improved Greeks for American Options Using Simulation

Lars Stentoft, Western University, Canada

#### 9:00-9:25 Rare Event Simulations using shaking transformations on stochastic processes

Emmanuel Gobet, and Gang Liu, Ecole Polytechnique, France

#### 9:30-9:55 An Iterative Simulation Approach for Solving Stochastic Control Problems in Finance

Chunyu Yang, BI Norwegian Business School, Norway; Stathis Tompaidis, University of Texas at Austin, USA

#### 10:00-10:25 Global Ranking Problems, Sequential Design and Applications to Real Options

Ruimeng Hu, and Michael Ludkovski, University of California, Santa Barbara, USA

Saturday, November 15

## MS29

### Forward Asset Allocation

8:30 AM-10:30 AM

Room: Adams - 6th Floor

The talks in this minisymposium will include results on optimal investments, turnpike problems and portfolio construction under market uncertainty under the new class of the so called forward performance criteria. These criteria complement the classical ones while offering flexibility with respect to investment horizons, market views and benchmarking.

#### Organizer: Thaleia Zariphopoulou

University of Texas at Austin, USA

#### 8:30-8:55 Predictable Investment Preferences: The Binomial Model

Xunyu Zhou, University of Oxford, United Kingdom

#### 9:00-9:25 Time-reversed HJB Equations

Sergey Nadtochiy, University of Michigan, Ann Arbor, USA

#### 9:30-9:55 The Robust Forward Criteria: Forward Performance Processes Under Model Uncertainty

Sigrid Kallblad, École Polytechnique, France

#### 10:00-10:25 Predictable Investment Preferences (Part II)

Thaleia Zariphopoulou, University of Texas at Austin, USA

Saturday, November 15

## CP14

### Insurance

8:30 AM-10:00 AM

Room: LaSalle 5 - 7th Floor

Chair: Jungmin Choi, East Carolina University, USA

### 8:30-8:55 Indifference Pricing of Variable Annuities

Jungmin Choi, East Carolina University, USA

### 9:00-9:25 Regression-based Monte Carlo Methods for Stochastic Control Models: Variable Annuities with Lifelong Guarantees

Yao Tung Huang and Yue Kuen Kwok, Hong Kong University of Science and Technology, Hong Kong

### 9:30-9:55 Constant Proportion Portfolio Insurance in Defined Contribution Pension Plan Management

Busra Z. Temocin, Middle East Technical University, Turkey; Ralf Korn, University of Kaiserslautern, Germany; Sevtap Kestel, Middle East Technical University, Turkey

Saturday, November 15

## CP15

### Stochastic Control - Part 2

8:30 AM-10:00 AM

Room: LaSalle 2 - 7th Floor

Chair: Li-Hsien Sun, University of California, Santa Barbara, USA

### 8:30-8:55 Equilibrium in Risk Sharing Games

Michail Anthropolos, University of Piraeus, Greece; Constantinos Kardaras, London School of Economics, United Kingdom

### 9:00-9:25 Asymptotics for Merton Problem with Capital Gain Taxes and Small Interest Rate

Min Dai, National University of Singapore, Republic of Singapore

### 9:30-9:55 Mean Field Games and Systemic Risk: Heterogeneous Grouping Models

Li-Hsien Sun and Jean-Pierre Fouque, University of California, Santa Barbara, USA

Saturday, November 15

## CP16

### Stochastic Volatility - Part 2

8:30 AM-10:30 AM

Room: LaSalle 3 - 7th Floor

Chair: Hongtao Yang, University of Nevada, Las Vegas, USA

### 8:30-8:55 Volatility, Risk-Premiums and Feedback Effect

Alper Inkaya, Middle East Technical University, Turkey

### 9:00-9:25 Asian Option Pricing Using Mellin Transform for BN-S Models with Stochastic Volatility

Indranil Sengupta, North Dakota State University, USA

### 9:30-9:55 Resolution of Policy Uncertainty and Sudden Declines in Volatility

Dacheng Xiu, University of Chicago, USA; Dante Amengual, Center for Monetary and Financial Studies, Spain

### 10:00-10:25 Market Option Prices and the Informational Consistency

Hongtao Yang and Seungmook Choi, University of Nevada, Las Vegas, USA

### Coffee Break

10:30 AM-11:00 AM



Room: Monroe - 6th Floor

Saturday, November 15

**IP6****Moral Hazard in Dynamic Risk Management**

11:00 AM-11:45 AM

*Room: Adams - 6th Floor**Chair: Erhan Bayraktar, University of Michigan, USA*

We consider a contracting problem in which a principal hires an agent to manage a risky project. When the agent chooses volatility components of the output process and the principal observes the output continuously, the principal can compute the quadratic variation of the output, but not the individual components. This leads to moral hazard with respect to the risk choices of the agent. Using a recent theory of singular changes of measures for Ito processes, we formulate a principal-agent problem in this context, and solve it in the case of CARA preferences. In that case, the optimal contract is linear in these factors: the contractible sources of risk, including the output, the quadratic variation of the output and the cross-variations between the output and the contractible risk sources. Thus, path-dependent contracts naturally arise when there is moral hazard with respect to risk management. We also provide comparative statics via numerical examples, showing that the optimal contract is sensitive to the values of risk premia and the initial values of the risk exposures.

**Jakša Cvitanic***California Institute of Technology, USA*

Saturday, November 15

**IP7****Adaptive Grids in Regression Monte Carlo**

11:45 AM-12:30 PM

*Room: Adams - 6th Floor**Chair: Erhan Bayraktar, University of Michigan, USA*

Regression Monte Carlo has been enormously successful in numerical solution of optimal stopping problems. It relies on the statistical tool of regression and the probabilistic idea of a stochastic mesh to construct an approximate stopping strategy. While the former has been extensively investigated, grid placement is typically prescribed by a basic simulation of underlying state process. We discuss the associated layers of inefficiency and introduce adaptive generation of these grids using sequential design schemes. This accomplishes active learning of the classifiers partitioning the state space into the continuation and stopping regions. As we show, adaptive refinement of the grids around the stopping boundaries can achieve an order of magnitude savings in gridding budgets. Moreover, sequential design opens the door for other statistical approaches, including Bayesian methods, kriging, and multi-armed bandits for this class of control problems. We examine dynamic regression algorithms that can implement such recursive estimation of the stopping strategy, and present several numerical examples in the context of multi-dimensional Bermudan option pricing.

**Mike Ludkovski***University of California, Santa Barbara, USA***Lunch Break**

12:30 PM-2:00 PM

*Attendees on their own***SIAG/FME Conference****Paper Prize Session**

12:30 PM - 2:00 PM

*Adams-6th Floor*

Saturday, November 15

**IP8****The Value of Being Lucky: Option Backdating and Non-diversifiable Risk**

2:00 PM-2:45 PM

*Room: Adams - 6th Floor**Chair: - Peter Tankov, Université Paris-Diderot, France*

The practice of executives influencing their option compensation by setting a grant date retrospectively is known as backdating. Since these options are usually granted at-the-money, selecting an advantageous grant date will be valuable to the executive. There is substantial evidence that backdating took place in the US, particularly prior to the tightening of SEC reporting requirements. In this talk, we develop and solve a utility-indifference model to quantify the value of the opportunity to backdate options. We show that the magnitude of ex ante gains from backdating is significant. Our model can be used to explain why backdating was more prevalent at firms with highly volatile stock prices. Joint work with Jia Sun (China Credit Ratings) and Elizabeth Whalley (Warwick Business School)

**Vicky Henderson***University of Warwick, United Kingdom*



Saturday, November 15

## IP9

### The Value of Queue Position in a Limit Order Book

2:45 PM-3:30 PM

Room:Adams - 6th Floor

Chair: - Peter Tankov, Université Paris-Diderot, France

Many financial markets are organized as electronic limit order books operating under a price-time priority rule. In practice, this creates a technological arms among high-frequency traders to establish advantageous early positions in the resulting FIFO queue. We develop a model for valuing orders based on their queue position that identifies two components of positional value: a static component that relates to the instantaneous trade-off between earning a spread and incurring adverse selection costs; and a dynamic component that captures future value that accrues by locking in given queue position. We empirically calibrated and test the model. Joint work with Kai Yuan (Columbia)

**Ciamac C. Moallemi**  
Columbia University, USA

## Coffee Break

3:30 PM-4:00 PM



Room:Monroe - 6th Floor

Saturday, November 15

## MS30

### Advanced Numerical Techniques in Financial Mathematics - Part II of II

4:00 PM-6:00 PM

Room:LaSalle 1 - 7th Floor

#### For Part 1 see MS5

These two minisymposia aim to discuss advanced numerical techniques for modern applications in financial mathematics. We will encounter efficient versions of Monte Carlo methods, for stochastic local volatility models, and for Credit Valuation Adjustment (CVA). Regarding PDE techniques we will discuss dimension reduction, spectral methods, discontinuous Galerkin, and also a CVA PDE technique under the Heston model. We have Fourier integration for BSDEs and for the so-called VIX Heston model calibration. Latest results for recent topics in computational finance are thus reported.

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

**Organizer: Karel In 't Hout**  
University of Antwerp, Belgium

#### 4:00-4:25 Dimension Reduction Techniques in Space and Discontinuous Galerkin in Time to Price High-Dimensional Options

Lina von Sydow, Uppsala University, Sweden; Erik Lehto, Royal Institute of Technology, Stockholm, Sweden; Paria Ghafari and Mats Wångersjö, Uppsala University, Sweden

#### 4:30-4:55 A New Hybrid Monte Carlo-Finite Difference Method to Obtain Counterparty Exposure Profiles and Sensitivities

Kees de Graaf, University of Amsterdam, The Netherlands; Drona Kandhai, University of Amsterdam and ING Bank, The Netherlands; Peter Sloom, University of Amsterdam, The Netherlands

#### 5:00-5:25 A Robust Spectral Method for Pricing Options under Local Volatility

Pindza Edson, Kailash C. Patidar, and Edgard Ngounda, University of the Western Cape, South Africa

#### 5:30-5:55 On the Sensitivity of Calibrated American Put Values to Short Rate Volatility

Aleksey Polishchuk, Bloomberg LP, USA

*continued in next column*

Saturday, November 15

## MS31

### Asymptotics in Finance

4:00 PM-5:30 PM

*Room: Hancock Parlor - 6th Floor*

Asymptotic analyses have contributed to our understanding of the limiting behaviors of prices in financial markets. This session features applications to derivative contracts.

#### Organizer: Roger Lee

*University of Chicago, USA*

#### 4:00-4:25 Explicit Implied Vols for Multifactor Local-Stochastic Vol Models

*Matthew Lorig, University of Washington, USA; Stefano Pagliarani, Ecole Polytechnique, France; Andrea Pascucci, Universita' di Bologna, Italy*

#### 4:30-4:55 Convergence of the Discrete Variance Swap in Time-Homogeneous Diffusion Models

*Carole Bernard, University of Waterloo, Canada; Zhenyu Cui, Brooklyn College of the City University of New York, USA; Don McLeish, University of Waterloo, Canada*

#### 5:00-5:25 Asymptotic Approximations for Some Path-Dependent Contracts

*Roger Lee, University of Chicago, USA*

Saturday, November 15

## MS32

### Mean Field Games - Part II of II

4:00 PM-6:00 PM

*Room: Grant Park Parlor - 6th Floor*

#### For Part 1 see MS12

Recent developments in the theory and applications of Mean Field Games (MFG)

#### Organizer: Rene Carmona

*Princeton University, USA*

#### 4:00-4:25 Mean Field Games and Systemic Risk

*Jean Pierre Fouque, University of California, Santa Barbara, USA*

#### 4:30-4:55 Mean Field Games with a Common Noise

*Daniel Lacker and Rene Carmona, Princeton University, USA; François Delarue, Université de Nice, Sophia Antipolis, France*

#### 5:00-5:25 Robust Nash Strategies in Mean Field LQG Games

*Jianhui Huang, The Hong Kong Polytechnic University, Hong Kong; Minyi Huang, Carleton University, Canada*

#### 5:30-5:55 Mean Field Models for Dynamic Matching Markets

*Nick Arnosti and Ramesh Johari, Stanford University, USA*

Saturday, November 15

## MS33

### Statistical Analysis of Risk and Stress Tests for Regulatory Policies - Part II of II

4:00 PM-6:00 PM

*Room: Millenium Parlor - 6th Floor*

#### For Part 1 see MS18

The Basel accords have suggested that VaR be the standard for measuring risk to financial institutions. Specifically, banks are required to keep regulatory capital sufficient to cover losses up to a prescribed quantile in their loss distributions. However, VaR continues to be the measurement of risk even though it has been shown to not encourage diversification in portfolio management. These talks will address various aspects of the regulatory system, such as measurement of risk, systemic risk factors, and statistical analysis of the financial data.

#### Organizer: Andrew Papanicolaou

*University of Sydney, Australia*

#### Organizer: Igor Cialenco

*Illinois Institute of Technology, USA*

#### 4:00-4:25 Asymptotic Single Risk Factor Model of Credit Risk: Empirical Evidence from Australia

*Silvio Tarca and Marek Rutkowski, University of Sydney, Australia*

#### 4:30-4:55 Perturbation Analysis on Decision-Making for Investment Portfolios Under Partial Information

*Andrew Papanicolaou, University of Sydney, Australia*

#### 5:00-5:25 Short Rate Models with Stochastic Volatility

*Andrew Lesniewski, Baruch College, USA; Heng Sun, Bank of New York Mellon, USA; Qi Wu, Chinese University of Hong Kong, Hong Kong*

#### 5:30-5:55 Optimal Consumption With Habit Formation In Markets with Transaction Costs And Unbounded Random Endowment

*Xiang Yu, University of Michigan, USA*

Saturday, November 15

## MS34

### Counterparty Risk, Liquidity and Funding - Part II of II

4:00 PM-5:30 PM

Room: Adams - 6th Floor

#### For Part I see MS14

The importance and complexity of the counterparty credit risk (CCR) and funding biases has been brought to the forefront of financial risk management by the developments surrounding the credit crisis 2008-2010. This led to explosion of research work that was devoted to theoretical and practical aspects of the CCR and multiple funding curves, and their relation to the systemic risk. This minisymposium will focus on presentation of the recent developments in this area, presented by the leading researchers from academia and from financial industry.

**Organizer: Tomasz Bielecki**

*Illinois Institute of Technology, USA*

**Organizer: Igor Cialenco**

*Illinois Institute of Technology, USA*

**Organizer: Stephane C. Crepey**

*Evry University, France*

**4:00-4:25 Wrong Way and Gap Risks Modeling: A Marked Default Time Approach**

*Stephane C. Crepey, Evry University, France*

**4:30-4:55 Joint Measure Calibration and Mean Reversion Skew for Interest Rates**

*Alexander Sokol, CompatibL, USA*

**5:00-5:25 Derivative Pricing under Collateralization and Differential Rates**

*Fabio Mercurio, Bloomberg LP, USA*

Saturday, November 15

## MS35

### Stochastic Financial Equilibria

4:00 PM-6:00 PM

Room: Water Tower Parlor - 6th Floor

A fundamental problem in financial economics is the one of existence, uniqueness and characterization of equilibrium prices in financial markets. It provides a theoretical underpinning of the entire field and gives rise to very interesting mathematical problems. Current research in the field include endogenous completeness and incomplete market models as well as a spectrum of mathematical difficulties that arise from their analysis. These range from various continuity and stability questions in the context of optimal-investment problems in incomplete markets to existence and uniqueness issues related to nonlinear BSDEs and their systems.

**Organizer: Gordan Zitkovic**

*University of Texas at Austin, USA*

**Organizer: Kasper Larsen**

*Carnegie Mellon University, USA*

**4:00-4:25 Feedback, Equilibrium and Financialization of Commodities Markets**

*Ronnie Sircar, Princeton University, USA*

**4:30-4:55 Integral Representation Theorems for Martingales Motivated by the Problems of Endogenous Completeness and Market Completeness with Derivative Securities**

*Daniel Schwarz and Dmitry Kramkov, Carnegie Mellon University, USA*

**5:00-5:25 The Folk Theorem with Imperfect Public Information in Continuous Time**

*Benjamin Bernard, University of Alberta, Canada*

**5:30-5:55 Taylor Approximation in Incomplete Radner Equilibrium Models**

*Jin Hyuk Choi, Carnegie Mellon University, USA*

Saturday, November 15

## CP17

### Stochastic Control - Part 3

4:00 PM-6:00 PM

Room: LaSalle 2 - 7th Floor

Chair: Bin Zou, University of Alberta, Canada

**4:00-4:25 Stochastic Target Problems with Controlled Probability of Success - A Probabilistic Approach**

*Geraldine Bouveret and Jean-Francois Chassagneux, Imperial College London, United Kingdom; Bruno Bouchard, Université Paris-Dauphine and ENSAE-ParisTech, Ceremade and Crest, France*

**4:30-4:55 Turnpike Property and Convergence Rate for an Investment Model with General Utility Functions**

*Harry Zhang, Imperial College, United Kingdom*

**5:00-5:25 Time Consistent Portfolio Selection under Short-Selling Prohibition**

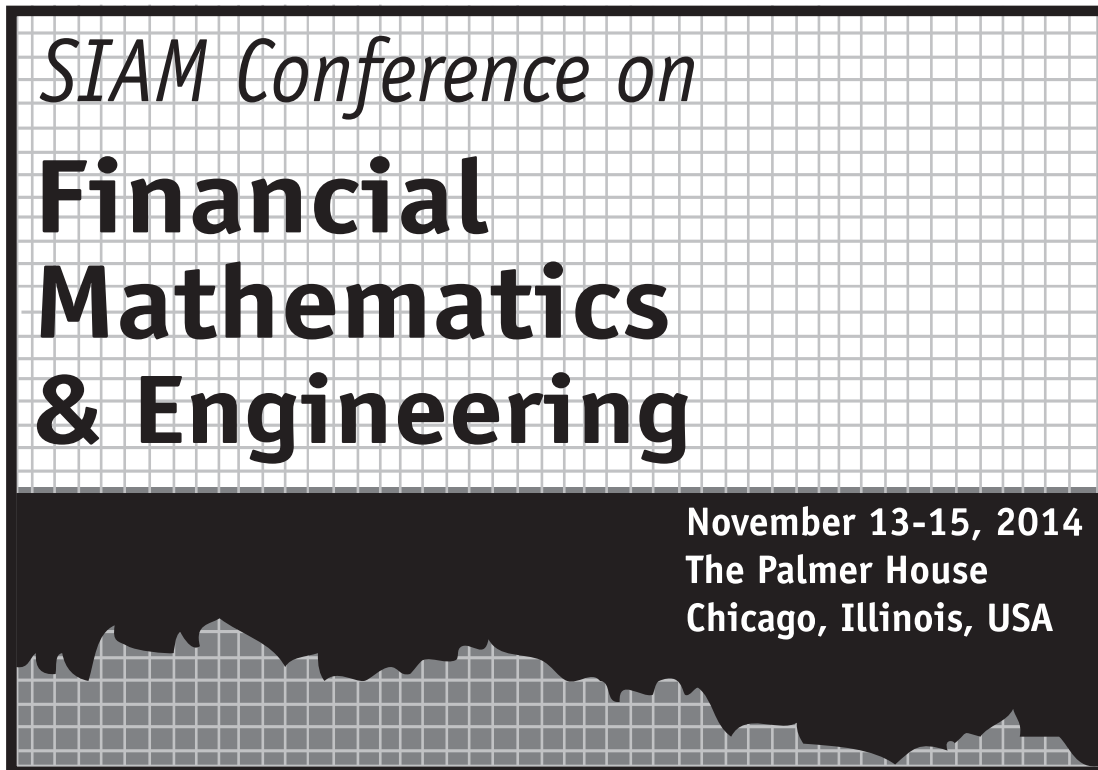
*Kwok Chuen Wong, The University of Hong Kong, Hong Kong and Imperial College London, United Kingdom; Alain Bensoussan, The University of Texas at Dallas and City University of Hong Kong, Hong Kong; Phillip S. Yam, The Chinese University of Hong Kong, Hong Kong; Siu Pang Yung, University of Hong Kong, Hong Kong, PRC*

**5:30-5:55 Optimal Investment and Risk Control Policies for An Insurer: Expected Utility Maximization**

*Bin Zou and Abel Cadenillas, University of Alberta, Canada*

# Notes

**FM14 Abstracts**



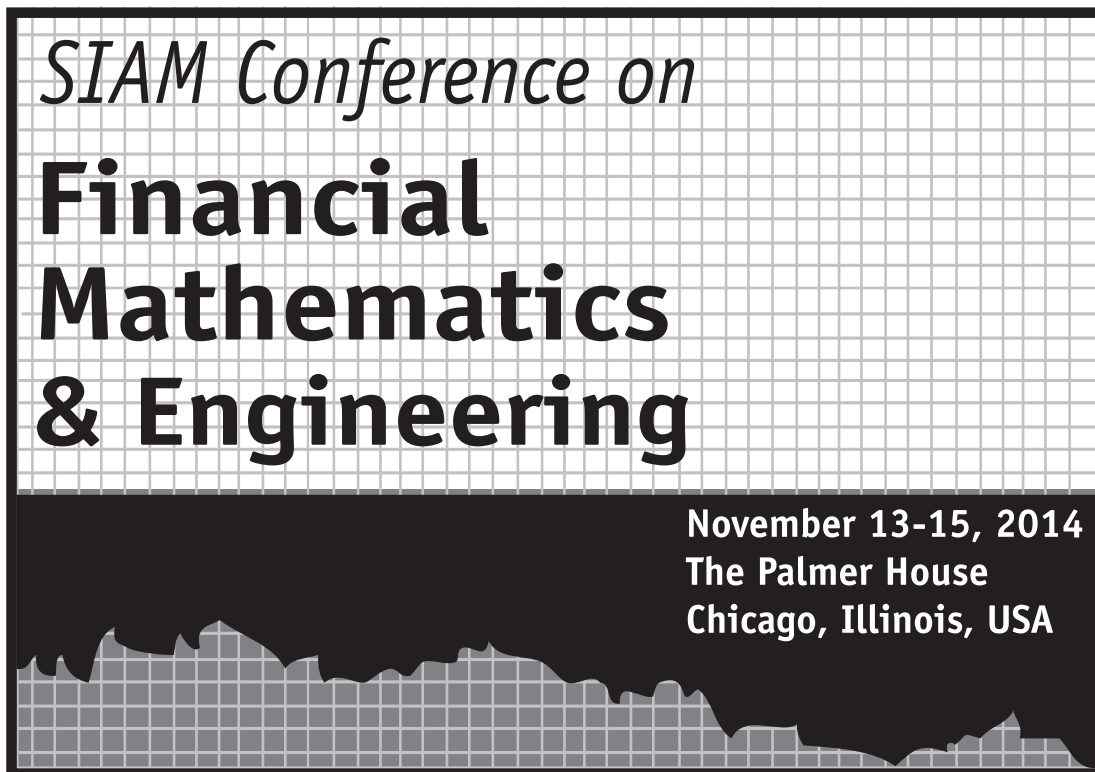
*SIAM Conference on*  
**Financial  
Mathematics  
& Engineering**

November 13-15, 2014  
The Palmer House  
Chicago, Illinois, USA

Abstracts are printed  
as submitted by the author.

# Notes

**Organizer and Speaker Index**



*SIAM Conference on*  
**Financial  
Mathematics  
& Engineering**

November 13-15, 2014  
The Palmer House  
Chicago, Illinois, USA

**A**

Amini, Hamed, MS9, 3:30 Thu  
 Andersen, Torben G., MS24, 9:30 Sat  
 Anthropolos, Michail, CP15, 8:30 Sat  
 Ararat, Cagin, CP10, 8:30 Fri

**B**

*Bauer, Daniel, MS2, 10:00 Thu*  
 Bauer, Daniel, MS2, 10:00 Thu  
 Bayraktar, Erhan, MS7, 4:00 Thu  
 Bechler, Kyle, MS25, 9:00 Sat  
 Beiglböck, Mathias, MS27, 8:30 Sat  
 Bernard, Benjamin, MS35, 5:00 Sat  
 Bernard, Carole, MS1, 10:30 Thu  
*Bichuch, Maxim, MS7, 3:30 Thu*  
 Bichuch, Maxim, MS7, 5:00 Thu  
*Bielecki, Tomasz, MS8, 3:30 Thu*  
*Bielecki, Tomasz, MS11, 8:30 Fri*  
*Bielecki, Tomasz, MS14, 8:30 Fri*  
*Bielecki, Tomasz, MS34, 4:00 Sat*  
 Bion-Nadal, Jocelyne, MS11, 9:30 Fri  
 Blair, James, CP9, 8:30 Fri  
 Bouchard, Bruno, IP1, 1:30 Thu  
 Bouveret, Geraldine, CP17, 4:00 Sat  
 Boyarchenko, Svetlana, MS19, 4:30 Fri  
 Braverman, Anton, MS9, 5:00 Thu

**C**

*Capponi, Agostino, MS15, 8:30 Fri*  
 Capponi, Agostino, MS15, 8:30 Fri  
*Carmona, Rene, MS12, 8:30 Fri*  
 Carmona, Rene, MS12, 8:30 Fri  
*Carmona, Rene, MS32, 4:00 Sat*  
*Cartea, Alvaro, MS23, 3:00 Fri*  
*Cartea, Alvaro, MS25, 8:30 Sat*  
 Cartea, Alvaro, MS25, 10:00 Sat  
 Chan, Patrick, MS17, 4:00 Fri  
 Chávez Casillas, Jonathan A., CP9, 9:00 Fri  
 Chen, Haoyun, CP1, 10:00 Thu

*Chen, Nan, MS21, 3:00 Fri*  
 Chen, Nan, MS21, 3:00 Fri  
 Chendra, Erwinna, CP3, 10:00 Thu  
 Cheng, Mingliang, CP5, 10:00 Thu  
 Cheridito, Patrick, MS8, 4:30 Thu  
 Chiu, Yi-Tai, CP8, 3:30 Thu  
 Choi, Jin Hyuk, MS35, 5:30 Sat  
 Choi, Jungmin, CP14, 8:30 Sat  
*Cialenco, Igor, MS8, 3:30 Thu*  
 Cialenco, Igor, MS8, 3:30 Thu  
*Cialenco, Igor, MS11, 8:30 Fri*  
*Cialenco, Igor, MS14, 8:30 Fri*  
*Cialenco, Igor, MS18, 3:00 Fri*  
*Cialenco, Igor, MS33, 4:00 Sat*  
*Cialenco, Igor, MS34, 4:00 Sat*  
 Cont, Rama, MS20, 3:00 Fri  
*Crepey, Stephane C., MS14, 8:30 Fri*  
*Crepey, Stephane C., MS34, 4:00 Sat*  
 Crepey, Stephane C., MS34, 4:00 Sat  
 Cvitanic, Jakša, IP6, 11:00 Sat

**D**

Da Gama Batista, Joao, CP8, 4:00 Thu  
 Dai, Min, CP15, 9:00 Sat  
 Date, Pares, CP11, 8:30 Fri  
 de Graaf, Kees, MS30, 4:30 Sat  
*Delarue, François, MS10, 3:30 Thu*  
*Delarue, François, MS17, 3:00 Fri*  
 Delarue, François, MS17, 3:00 Fri  
*Dodson, John A., MS4, 10:00 Thu*  
 Dolinsky, Yan, MS20, 4:00 Fri  
 Donnelly, Ryan, MS25, 8:30 Sat  
 Duarte, Diogo, MS18, 4:00 Fri

**E**

Evatt, Geoff, CP8, 4:30 Thu

**F**

Fahim, Arash, MS7, 4:30 Thu  
*Fahim, Arash, MS20, 3:00 Fri*

*Fahim, Arash, MS27, 8:30 Sat*  
 Feinstein, Zachary, MS18, 3:00 Fri  
 Feng, Liming, MS26, 10:00 Sat  
 Feng, Qian, MS5, 5:00 Thu  
*Feng, Runhuan, MS2, 10:00 Thu*  
 Feng, Runhuan, MS2, 11:00 Thu  
*Figuerola-Lopez, Jose E., MS16, 8:30 Fri*  
 Figuerola-Lopez, Jose E., MS16, 8:30 Fri  
 Fischer, Markus, MS10, 3:30 Thu  
 Fontana, Claudio, CP6, 3:30 Thu  
 Forsyth, Peter, IP2, 2:15 Thu  
 Forsyth, Peter, MS2, 10:30 Thu  
 Fouque, Jean Pierre, MS32, 4:00 Sat  
 Frei, Christoph, MS13, 9:30 Fri

**G**

Gerhold, Stefan, CP11, 9:00 Fri  
 Ghamami, Samim, MS18, 3:30 Fri  
 Giesecke, Kay, MS18, 4:30 Fri  
*Giesecke, Kay, MS21, 3:00 Fri*  
*Giesecke, Kay, MS24, 8:30 Sat*  
 Giglio, Stefano, MS15, 9:30 Fri  
 Glau, Kathrin, CP3, 10:30 Thu  
 Glover, Kristoffer J., CP5, 10:30 Thu  
 Gobet, Emmanuel, MS28, 9:00 Sat  
 Gomes, Diogo, MS12, 9:30 Fri  
 Graber, Jameson, MS17, 3:30 Fri  
 Grbac, Zorana, CP6, 4:00 Thu  
 Guan, Yuanying, CP8, 5:00 Thu  
 Gueant, Olivier, MS23, 3:30 Fri  
 Gunawardena, Athula D., CP13, 3:00 Fri  
 Guo, Jing, MS1, 11:30 Thu  
 Guo, Ziyi, MS4, 10:00 Thu

**H**

Hansen, Lars Peter, IP5, 11:45 Fri  
 Haugh, Martin B., CP11, 10:00 Fri  
*He, Xuedong, MS1, 10:00 Thu*



He, Xuedong, MS1, 10:00 Thu  
 Henderson, Vicky, IP8, 2:00 Sat  
 Hendricks, Dieter, CP2, 10:00 Thu  
 Hu, Ruimeng, MS28, 10:00 Sat  
 Huaman-Aguilar, Ricardo, CP5, 11:00 Thu  
 Huang, Huaxiong, MS2, 11:30 Thu  
 Huang, Minyi, MS32, 5:00 Sat  
 Huang, Yao Tung, CP14, 9:00 Sat  
*Huang, Yu-Jui, MS20, 3:00 Fri*  
 Huang, Yu-Jui, MS27, 9:00 Sat  
*Huang, Yu-Jui, MS27, 8:30 Sat*

**I**

Ichiba, Tomoyuki, SP1, 2:00 Fri  
*In 't Hout, Karel, MS5, 3:30 Thu*  
 In 't Hout, Karel, MS22, 3:30 Fri  
*In 't Hout, Karel, MS30, 4:00 Sat*  
 Inkaya, Alper, CP16, 8:30 Sat  
*Itkin, Andrey, MS22, 3:00 Fri*  
 Itkin, Andrey, MS22, 3:00 Fri  
 Iyer, Krishnamurthy, MS9, 4:30 Thu

**J**

Johari, Ramesh, MS32, 5:30 Sat

**K**

Kallblad, Sigrid, MS29, 9:30 Sat  
 Kang, Chulmin, CP13, 3:30 Fri  
 Khaliq, Abdul M., MS22, 4:00 Fri  
 Khan, Waseem A., CP7, 3:30 Thu  
 Kinzebulatov, Damir, MS23, 4:00 Fri  
 Kupper, Michael, MS11, 9:00 Fri  
 Kwon, Dharma, MS6, 4:00 Thu

**L**

Lacker, Daniel, MS32, 4:30 Sat  
 Lallouache, Mehdi, CP2, 10:30 Thu  
 Lange, Nina, CP12, 3:00 Fri  
 Larsen, Kasper, MS13, 8:30 Fri  
*Larsen, Kasper, MS35, 4:00 Sat*  
*Larsson, Elisabeth, MS3, 10:00 Thu*

Larsson, Elisabeth, MS3, 10:00 Thu  
 Lee, Jungwoo, CP4, 10:00 Thu  
*Lee, Roger, MS31, 4:00 Sat*  
 Lee, Roger, MS31, 5:00 Sat  
*Leung, Tim, MS6, 3:30 Thu*  
 Leung, Tim, MS6, 5:00 Thu  
 Levendorskii, Sergei, MS19, 4:00 Fri  
*Li, Lingfei, MS19, 3:00 Fri*  
 Li, Lingfei, MS19, 3:00 Fri  
*Li, Lingfei, MS26, 8:30 Sat*  
 Linetsky, Vadim, MS26, 8:30 Sat  
 Liu, Jingshu, CP10, 9:00 Fri  
 Lorig, Matthew, MS31, 4:00 Sat  
*Ludkovski, Michael, MS28, 8:30 Sat*  
 Ludkovski, Mike, IP7, 11:45 Sat

**M**

*Maggis, Marco, MS8, 3:30 Thu*  
 Maggis, Marco, MS8, 4:00 Thu  
*Maggis, Marco, MS11, 8:30 Fri*  
 Mancini, Cecilia, MS16, 9:00 Fri  
 McLeish, Don, MS31, 4:30 Sat  
*Mendoza-Arriaga, Rafael, MS19, 3:00 Fri*  
 Mendoza-Arriaga, Rafael, MS19, 3:30 Fri  
*Mendoza-Arriaga, Rafael, MS26, 8:30 Sat*  
 Mercurio, Fabio, MS34, 5:00 Sat  
 Milovanovic, Slobodan, CP13, 4:00 Fri  
*Minca, Andreea, MS9, 3:30 Thu*  
 Moallemi, Ciamac C., IP9, 2:45 Sat  
 Moallemi, Ciamac C., MS15, 9:00 Fri  
 Moll, Benjamin, MS10, 4:00 Thu  
 Mueller, Marvin, CP9, 9:30 Fri  
 Muhle-Karbe, Johannes, MS7, 3:30 Thu  
 Mulaudzi, Mmboniseni, CP1, 10:30 Thu  
 Muravey, Dmitry, CP6, 4:30 Thu

**N**

Nadtochiy, Sergey, MS29, 9:00 Sat  
 Nie, Yutian, MS26, 9:30 Sat  
 Nutz, Marcel, MS20, 3:30 Fri

**O**

Obloj, Jan, IP4, 11:00 Fri  
 Olafsson, Sveinn O., MS16, 9:30 Fri  
*Oosterlee, Cornelis W., MS5, 3:30 Thu*  
*Oosterlee, Cornelis W., MS30, 4:00 Sat*  
 Orbay, Berk, CP4, 10:30 Thu  
 Overbeck, Ludger, CP10, 9:30 Fri

**P**

Palczewski, Jan, CP12, 3:30 Fri  
*Papanicolaou, Andrew, MS18, 3:00 Fri*  
*Papanicolaou, Andrew, MS33, 4:00 Sat*  
 Papanicolaou, Andrew, MS33, 4:30 Sat  
*Papapantoleon, Antonis, MS8, 3:30 Thu*  
*Papapantoleon, Antonis, MS11, 8:30 Fri*  
 Papapantoleon, Antonis, MS11, 8:30 Fri  
 Patidar, Kailash C., MS30, 5:00 Sat  
 Pierre, Erwan, CP1, 11:00 Thu  
 Piret, Cecile M., MS3, 10:30 Thu  
 Pirvu, Traian A., MS1, 11:00 Thu  
 Polishchuk, Aleksey, MS30, 5:30 Sat  
 Pulido, Sergio, MS13, 10:00 Fri

**Q**

Qin, Likuan, MS26, 9:00 Sat

**R**

Ramirez, Hugo E., CP1, 11:30 Thu  
 Ren, Dan, CP10, 10:00 Fri  
 Rosenbaum, Mathieu, MS23, 3:00 Fri  
 Rudolff, Birgit, MS11, 10:00 Fri  
 Ruijter, Marjon, MS5, 4:30 Thu  
 Rutkowski, Marek, MS14, 8:30 Fri

**S**

Sadoghi, Amirhossein, CP9, 10:00 Fri  
 Sagna, Abass, CP13, 4:30 Fri  
 Schwarz, Daniel, MS35, 4:30 Sat  
*Schwenkler, Gustavo, MS24, 8:30 Sat*  
 Schwenkler, Gustavo, MS24, 8:30 Sat  
 Secomandi, Nicola, CP12, 4:00 Fri

Sengupta, Indranil, CP16, 9:00 Sat  
 Shcherbakov, Victor, CP3, 11:00 Thu  
 Shek, Justin, MS14, 10:00 Fri  
 Shkolnik, Alex, MS21, 3:30 Fri  
 Singor, Stefan, MS5, 4:00 Thu  
 Sircar, Ronnie, MS35, 4:00 Sat  
 Sirignano, Justin, MS21, 4:30 Fri  
 Sokol, Alexander, MS34, 4:30 Sat  
 Song, Qingshuo, CP7, 4:00 Thu  
 Sotiropoulos, Michael, IP3, 5:45 Thu  
 Spiliopoulos, Konstantinos, MS15,  
 10:00 Fri  
 Stein, Harvey, MS14, 9:00 Fri  
 Stentoft, Lars, MS28, 8:30 Sat  
 Stoikov, Sasha F., MS23, 4:30 Fri  
 Sturm, Stephan, MS14, 9:30 Fri  
 Sun, Li-Hsien, CP15, 9:30 Sat

**T**

Tahbaz-Salehi, Alireza, MS21, 4:00 Fri  
 Tanaka, Keiichi, CP6, 5:00 Thu  
 Tankov, Peter, MS16, 10:00 Fri  
 Tarca, Silvio, MS33, 4:00 Sat  
 Temocin, Busra Z., CP14, 9:30 Sat  
 Todorov, Viktor, MS24, 10:00 Sat  
*Toivanen, Jari, MS22, 3:00 Fri*  
 Toivanen, Jari, MS22, 4:30 Fri  
 Tolmasky, Carlos, MS4, 10:30 Thu  
 Tompaidis, Stathis, MS28, 9:30 Sat  
 Topper, Juergen T., CP4, 11:00 Thu  
 Toropov, Alexander, MS3, 11:00 Thu

**V**

Van der Stoep, Anthonie W., MS5, 3:30  
 Thu  
*von Sydow, Lina, MS3, 10:00 Thu*  
 von Sydow, Lina, MS30, 4:00 Sat

**W**

Wagalath, Lakshitha, MS9, 4:00 Thu  
 Wang, Gu, MS27, 9:30 Sat  
 Weber, Stefan, MS8, 5:00 Thu  
 Webster, Kevin, MS25, 9:30 Sat  
 Wildman, Mackenzie, CP7, 4:30 Thu  
 Wolfram, Marie-Therese, MS17, 4:30  
 Fri  
 Wong, Kwok Chuen, CP17, 5:00 Sat  
 Wu, Hailing, CP3, 11:30 Thu  
 Wu, Qi, MS33, 5:00 Sat

**X**

*Xing, Hao, MS13, 8:30 Fri*  
 Xing, Hao, MS13, 9:00 Fri  
 Xiu, Dacheng, CP16, 9:30 Sat

**Y**

Yam, S.C.P, MS12, 9:00 Fri  
 Yamazaki, Kazutoshi, MS6, 4:30 Thu  
 Yang, Hongtao, CP16, 10:00 Sat  
 Ye, Jinchun, MS4, 11:00 Thu  
 Yeo, Joongyeub, CP2, 11:00 Thu  
 Yolcu Okur, Yeliz, CP11, 9:30 Fri  
 Yong, Jiongmin, MS12, 10:00 Fri  
 Yu, Xiang, MS33, 5:30 Sat

**Z**

Zambelli, Antoine E., CP4, 11:30 Thu  
*Zariphopoulou, Thaleia, MS29, 8:30 Sat*  
 Zariphopoulou, Thaleia, MS29, 10:00  
 Sat  
 Zhang, Harry, CP17, 4:30 Sat  
 Zhang, Hongzhong, MS6, 3:30 Thu  
 Zhang, Hongzhong, CP7, 5:00 Thu  
 Zhang, Lan, MS24, 9:00 Sat  
 Zhang, Shuhua, CP12, 4:30 Fri  
 Zhang, Yuchong, MS27, 10:00 Sat  
 Zhou, Lu, MS4, 11:30 Thu  
 Zhou, Xunyu, MS29, 8:30 Sat

Zhou, Zhou, MS20, 4:30 Fri  
 Zhu, Chao, CP5, 11:30 Thu  
 Zhu, Geoffrey, MS10, 4:30 Thu  
 Zhu, Lingjiong, CP2, 11:30 Thu  
*Zitkovic, Gordan, MS35, 4:00 Sat*  
 Zou, Bin, CP17, 5:30 Sat

## FM14 Budget

### Conference Budget

#### SIAM Conference on Financial Mathematics and Engineering

November 13-15, 2014

Chicago, IL

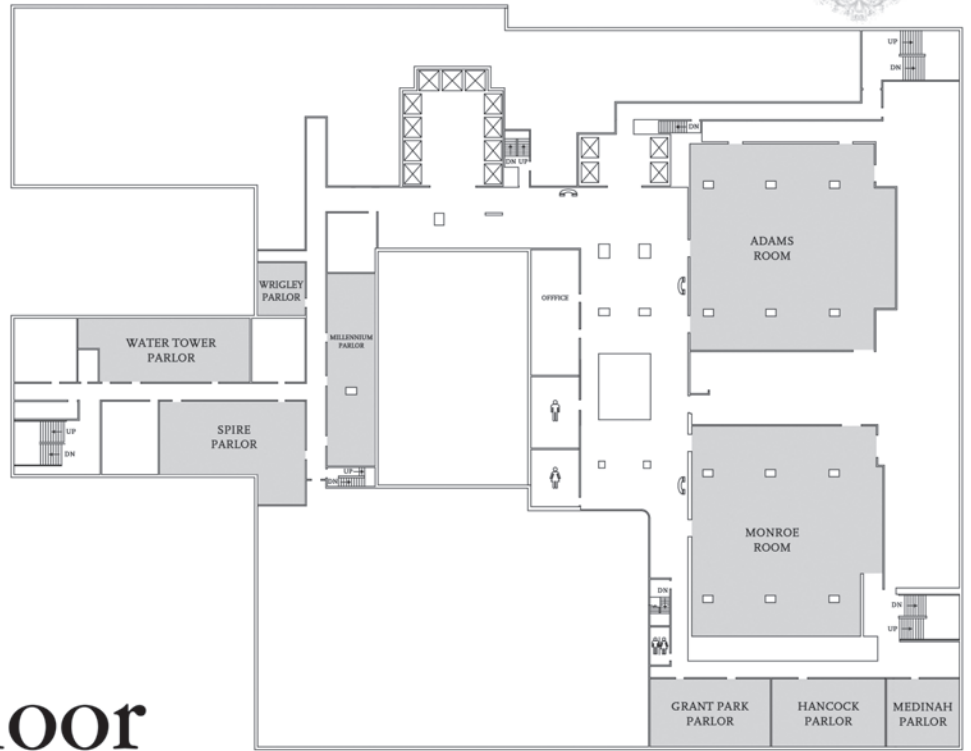
Expected Paid Attendance	220	
Revenue		
Registration Income		\$67,330
Total		\$67,330
Expenses		
Printing		\$1,000
Organizing Committee		\$3,100
Invited Speakers		\$10,125
Food and Beverage		\$20,400
AV Equipment and Telecommunication		\$16,200
Advertising		\$4,000
Conference Labor (including benefits)		\$33,958
Other (supplies, staff travel, freight, misc.)		\$5,900
Administrative		\$9,523
Accounting/Distribution & Shipping		\$4,675
Information Systems		\$8,361
Customer Service		\$3,097
Marketing		\$4,809
Office Space (Building)		\$2,626
Other SIAM Services		\$2,976
Total		\$130,750
Net Conference Expense		(\$63,420)
Support Provided by SIAM		<u>\$63,420</u>
		\$0

Estimated Support for Travel Awards not included above:

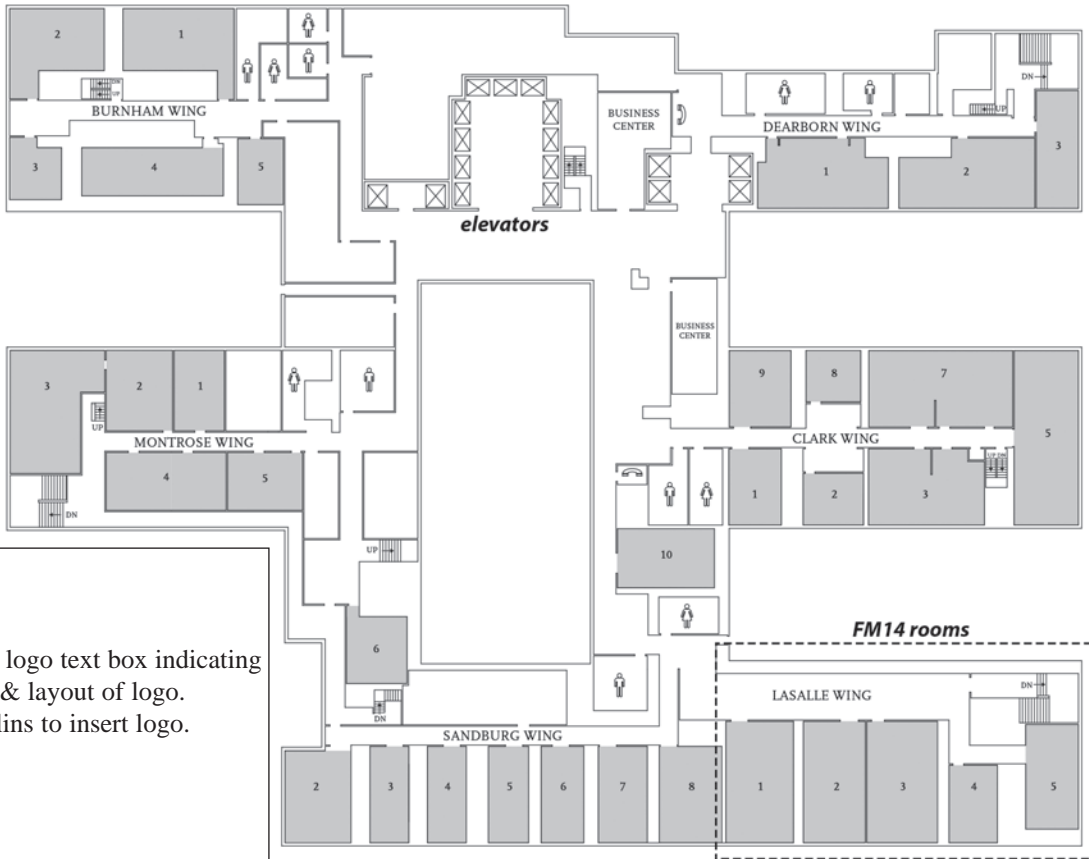
Early Career and Students	18	\$12,800
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# Hotel Floor Plan Palmer House, Chicago

## SIXTH floor



## SEVENTH floor



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