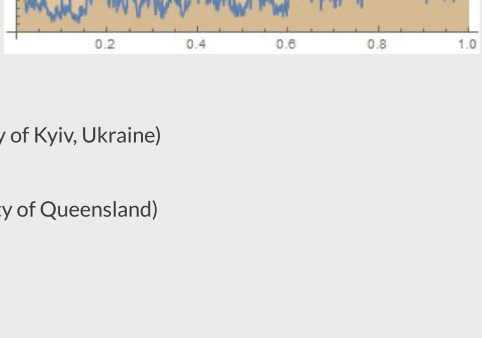
Mathematics of Risk – 2022

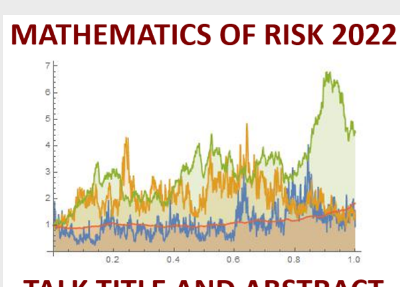


31 Oct 2022 - 11 Nov 2022
8:00 am - 5:00 pm

Organisers:
Alex Novikov (University of Technology, Sydney)
Konstantin Borovkov (The University of Melbourne)
Kais Hamza (Monash University)
Yuliia Mishura (Taras Shevchenko National University of Kyiv, Ukraine)
Nino Kordzakhia (Macquarie University)
Kazutoshi Yamazaki (Kansai University and University of Queensland)
Erik Schlogl (University of Technology, Sydney)

Program Description:
This research program will mostly address, but will not be limited to, the aspects of mathematical modelling and subsequent analysis of risks related to activities in the financial industry and, more generally, economics. Major attention will be paid to studying the mathematical theory that can be used to model more general types of risk, related to chronic and long-term hazards and extremes, as well as the interplay between them. It will bring together leading researchers in the area from around the world in a hybrid mode, as well as, practitioners from the financial industry and regulator.

Program Structure:



LECTURES

C1. Generalized Integral Transforms in Mathematical Finance (3 hours)
9am – 11.am, Tuesday 8/11
Dmitri Muravey (WorldQuant, global quantitative asset management firm)

C2. Mathematical Modelling of the Term Structure of Interest Rates – From Fundamentals to a Post-LIBOR World (5 hours)
Tuesday 1/11, Thursday 3/11, all at 9.00-11am; Friday 4/11, 9.00-10am
Prof Erik Schlogl (Prof of Quantitative Finance, University of Technology Sydney)

C3. Machine Learning algorithms in signal processing and Finance (7 hours).
I.Guo, J.Hinz, G.Moustakides

Dr Ivan Guo (Monash University)
11am – 1pm on Tuesday 1/11, 11am – 12pm Thursday 3/11
Title: Machine Learning algorithms in Finance

Dr Jury Hinz (National Australian Bank, Sydney)
12pm -1pm on Thursday 3/11
Title: Reinforcement Learning

George Moustakides (Professor, Department of Electrical & Computer Engineering, University of Patras, Greece)
Lecture on Friday 4/11, 11am – 1pm
Title: Machine learning methods for statistical decision making

Tutorial on Tuesday 8/11, 12pm – 1pm
Title: Machine learning for signal processing

C4. Functional limit theorems for financial markets with long-range dependence
Friday 4/11 10.00-11.00
Konstiantyn Ralchenko (Professor, Taras Shevchenko National University of Kyiv, Ukraine)

Zoom meetings, 4 occurrences, Canberra, Melbourne, Sydney time:
Every day, until Nov 8, 2022, 4 occurrence(s)
Nov 1, 2022 09:00 –13:00
Nov 3, 2022 09:00 –13:00
Nov 4, 2022 09:00 –13:00
Nov 8, 2022 09:00 –13:00

> Join from PC, Mac, iOS or Android using a common link for all four days:
> https://unimelb.zoom.us/j/84705337104?pwd=SGhwMHFoVHdXR2ZZamRCM3UwYXFJUT09
> Password: 386880

MINI-SYMPOSIUMS

S1. Change-point analysis and analysis of structural changes
Monday 7/11, 9.00am to 7pm
Organisers: A.Novikov, A.Tartakovsky

> S1 morning & afternoon sessions — 7 Nov 2022
> Zoom meeting on Nov 7, 2022 09:00 Canberra, Melbourne, Sydney
> Join from PC, Mac, iOS or Android: https://unimelb.zoom.us/j/87404736140?pwd=VkVwTitaNnh3RnlaZEpnVjVGRTRRUT09
> Password: 407834

S2. Recent Advances in Stochastic Modelling in Finance and Economics
Monday 31/10, 9.30am to 7pm, Thursday 31/10, 9.00am to 7pm,
Organiser: A.Novikov

> 1) S2 morning session – 31 Oct 2022
> Zoom meeting on Oct 31, 2022 09:30 Canberra, Melbourne, Sydney
> Join from PC, Mac, iOS or Android: https://unimelb.zoom.us/j/89563345702?pwd=UXJuOU9pdE9PZTFGVVBXdFBiQlVKUT09
> Password: 109184
>
> 2) S2 afternoon session – 31 Oct 2022
> Zoom meeting on Oct 31, 2022 15:00 Canberra, Melbourne, Sydney
> Join from PC, Mac, iOS or Android: https://unimelb.zoom.us/j/81795791767?pwd=bTFZVmZ6QzlrdENoY1FzUVNvNWhrQT09
> Password: 395875

Discussion Forums
F1. Stochastic and Statistical analysis of long-range dependent processes
(4/11 afternoon)
Organisers: Y.Mishura, K.Ralchenko, N.Kordzakhia

> F1 afternoon session (15:00-18:00)
> https://macquarie.zoom.us/j/89085319764?pwd=WWp5UUY5ckd1L0M4ZENBRjdxZnJkUT09
> Meeting ID: 890 8531 9764
> Passcode: 876361

F4. Stochastic and Statistics analysis of Jump processes.
(2/11 morning and afternoon)
Organiser: K.Yamazaki

> F4 morning session (9:00-13:00)
> https://uqz.zoom.us/j/82781126754?pwd=NXdRSTV5SWx4dnFLNnQxR2crQTIrZz09
> meeting ID: 827 8112 6754
> passcode: 627471
>
> F4 afternoon session (15:00-19:00)
> https://uqz.zoom.us/j/81407110069?pwd=RHNRWmtuaGZJNjBpUlFpc1FjMXArUT09
> meeting ID: 814 0711 0069
> passcode: 266902

F5. Mathematical Modelling of the Term Structure of Interest Rates.
(9/11, Morning)
Organiser: E.Schlogl

> F5 morning session (9:00-11:00)
> https://macquarie.zoom.us/j/83813022646
> Meeting ID: 838 1302 2646

F7. Modern topics in Finance.
Organisers: K.Hamza, F.Klebaner
The talk by Dr Jie Yen Fan will be followed by discussions which will be held at Matrix House.

> F7 afternoon session (15:00-15:30)
> https://uni-sydney.zoom.us/j/84209105666?pwd=ZWd2emowcXNjL3JTOFBGeTlRb0YvQT09
> Meeting ID: 84209105666
> passcode: 293853

In-person participant list:
Alex Novikov (University of Technology Sydney)
Konstantin Borovkov (University of Melbourne)
Kais Hamza (Monash University)
Nino Kordzakhia (Macquarie University)
Kazutoshi Yamazaki (Kansai University and University of Queensland)
Erik Schlogl (University of Technology Sydney)
Fima Klebaner (Monash University)
Artem Prokhorov (University of Sydney)
Robert James (University of Sydney)
Eckhard Platen (University of Technology Sydney)
Masaaki Fukasawa (Osaka University, Japan)
Alex Tartakovsky (AGT StatConsult, Los Angeles, USA)
George V. Moustakides (ECE University of Patras, Greece)
Miryana Grigorova (University of Warwick)
Arturo Kohatsu-Higa (Ritsumeikan University, Japan)
Anna Aksamit (University of Sydney)
Aihua Xia (University of Melbourne)
Peter Spreij (University of Amsterdam, Holland)
Jie Yen Fan (University of Sydney)
Jiro Akahori (Ritsumeikan University, Japan)
Robert Elliott (University of South Australia, University of Calgary)
Ivan Guo (Monash University)
Kostiantyn Ralchenko (Taras Shevchenko National University of Kyiv, Ukraine)
Travis Monk (University of Western Sydney)
Kei Noba (Institute of Statistical Mathematics, Japan)
Yuri Imamura (Kanazawa University, Japan)
Yushi Hamaguchi (Osaka University, Japan)
Vladimira Seckarova (Monash University)
Alexander Buryak (National Australian Bank)
Anton Skrobotov (Russian Presidential Academy of Nation Economy and Public Administration)
Peter Taylor (University of Melbourne)
Ken Palmer (National Taiwan University)
Peter Morrison (University of Technology Sydney)
Pavel Shevchenko (Macquarie University)
Jessica Leung (Monash University)
Peilun He (Macquarie University)
Vincent Liang (University of Melbourne)
Phat Nguyen (University of Melbourne)
Jun Seok Han (Macquarie University)
Alexander Semenov (University of Florida)
Svitlana Ralchenko (Taras Shevchenko National University of Kyiv)

Online participant list:
Vladimir Dragalin (Statistics and Decision Sciences, Johnson and Johnson)
Anthony Brockwell (Wellhan Partners LLC)
Amine LKABOUS (University of Southampton)
Oscar Peralta Gutierrez (University of Lausanne)
Jie Yen Fan (University of Sydney)
Anton Yurchenko-Tytarenko (University of Oslo)
Dai Taguchi (Okayama university)
Mitsuki Kobayashi (Waseda University)
Phillip Yam (CUHK, Statistics)
Xiaowen Zhou (Concordia University)
Kevin Lu (University of Washington)
Oscar Peralta (University of Lausanne)
Rustam Ibragimov (Imperial College Business School)
Xiang Yu (Hong Kong Polytechnic University)
José Luis Pérez Garmendia (CIMAT)
Kihun Nam (Monash University)
Alexander Novikov (UTS)
Dmitry Muravey (ADIA)
Juri Hinz (NAB)
Nino Kordzakhia (Macquarie University)
Yuliya Mishura (Taras Shevchenko National University of Kyiv)
Anton Yurchenko-Tytarenko (University of Oslo)
Xiaowen Zhou (Concordia University)
Oscar Tian (Monash University)
Michael Baron (American University)
Yajun Mei (Georgia Institute of Technology)
Christina Nikitopoulos (University of Technology Sydney)
Cheng-Der Fuh (Zhejiang University City College)
Pavel Shevchenko (Macquarie University)
Mikhail Zhitlukhin (Steklov Mathematical Institute, Moscow, Russia)
Jun Han (Macquarie University)
Vladimir Dragalin (Johnson & Johnson)
Yuri Kabanov (University of Franche-Comte)
Georgios Fellouris (University of Illinois, Urbana-Champaign)
Nathan Ross (University of Melbourne)
Timothy Ling
Duy Phat Nguyen (The University of Melbourne)
Jingyi Zhang (University of Melbourne)

Week 1 participants

ASSOCIATED EVENTS

MATRIX Wine and Cheese Afternoon 1 November 2022
On the first Tuesday of each program, MATRIX provides a pre-dinner wine and cheese afternoon. Produce is locally-sourced to showcase delicacies from the region.

CONTACT
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Email: office@matrix-inst.org.au

Acknowledgement
We respectfully acknowledge the Dja Dja Wurrung and Kulin alliance of Aboriginal Victorian peoples and traditional owners of country throughout Australia. We pay respect to the ongoing living culture of First Peoples.