ICCF24 Conference Program

Tuesday, April 2nd

Start 8:30 AM: Registration (in Amsterdam's Science Park Congress Centre)

Morning:

9:00 : Turing Room: Welcome *(chair: Kees Oosterlee)*

9:15 – 10:00: Turing Room: Plenary 1: **Emmanuel Gobet** ***(****Palaiseau cedex, France):* "Quantitative modelling and analysis of the Automated Market Maker Uniswap"

10:00 – 10:45: Turing Room: Plenary 2: **Alvaro Leitao Rodriguez** *(U. Oberta de Catalunya, Spain):* "Quantum computing for computational finance: overview, challenges, opportunities"

10:45 – 11:15: Break, coffee

11:15 – 12:55: Mini-symposium session 1 (4 presentations), 4 rooms

Turing Room: Computational and statistical methods for extremes in finance *(chair: Stéphane Girard)*

- **Michaël Allouche** (Kaiko, France) "Learning of extreme Expected Shortfall with neural networks. Application to cryptocurrency data"
- **Yi He** (Amsterdam, Netherlands) "Detecting spurious factor models"
- **Jean Pachebat** (Ecole Polytechnique, France) "Simulation of multivariate extreme events with generative models"
- **Chen Zhou** (Rotterdam, Netherlands) "Estimating probabilities of multivariate failure sets based on pairwise tail dependence coefficients"

Euler Room: Algorithmic trading and market microstructures *(chair: Shuaiqiang Liu)*

- **Fenghui Yu** *(Delft, Netherlands):* "Execution probabilities in a limit order book with stochastic order flows"
- **Peng Guo** *(Peking U., China):* "Optimal execution with relative entropy, a Schrödinger bridge approach"
- **Xue Cheng** *(Peking, China):* "Optimal execution subject to reservation strategies"
- **Shuaiqiang Liu** *(Delft & ING Bank, Netherlands):* "A generative deep learning model for volatility surfaces implied in the market"

Hypatia Room: Computational Finance I *(chair: Carlos Vazquez Cendon)*

- **Thomas Kruse** *(Wuppertal, Germany):* "Multilevel Picard iteration for high-dimensional semilinear parabolic PDEs"
- **Long Teng** *(Wuppertal, Germany):* "A regression-based approach to solve high-dimensional nonlinear pricing BSDEs"
- **Christina Christara** *(Toronto, Canada):* "Analysis of high-order time stepping schemes for parabolic PDEs with nonsmooth initial conditions"
- **Martyna Zdeb** *(Wroclaw, Poland):* "Modelling and pricing of multi-region catastrophe bonds"

Ada Room: PDE methods in Finance *(chairs: Karel in 't Hout, Michèle Vanmaele)*

- **Fabien Le Floc'h** *(Calypso, Paris, France):* "Instabilities in super time-stepping schemes"
- **Luis Ortiz Gracia** *(U. Barcelona, Spain):* "Climate-related default probability"
- **Karel in 't Hout** *(U. Antwerp, Belgium):* "On the approximation of Greeks for American-style options"
- **Xian-Ming Gu** *(Chengdu, China, and Utrecht, NL):* "A parallel-in-time iterative method for American option pricing"

13:00 – 14:00 Lunch

Afternoon:

14:00 – 15:40: Mini-symposia session 2 (4 presentations), 4 rooms

Turing Room: Machine Learning methods in Finance I *(chair: Jasper Rou)*

- **Costas Smaragdakis** *(Univ. Samos, Greece):* "A deep implicit-explicit minimizing movement method for option pricing in jump-diffusion models"
- **Silvia Lavagnini** *(BI Norwegian Business School, Norway):* "Deep quadratic hedging"
- **Alessandro Gnoatto** *(U. Verona, Italy):* "A Deep solver for BSDEs with jumps"
- **Yannick Limmer** *(University of Oxford, UK):* "Robust hedging GANs"

Euler Room: Recent advances in transform (Fourier/Laplace) methods for computational finance and insurance, part I *(chair: Chiheb Ben Hammouda)*

- **Sergio Pulido** *(Paris-Saclay, France):* "Affine Volterra processes with jumps"
- **Michael Samet** *(RWTH Aachen, Germany):* "Optimal damping and hierarchical adaptive quadrature for efficient Fourier pricing of multi-asset options"
- **Xiaoyu Shen** *(FF Quant Advisory, Netherlands):* "A cosine tensor network for XVA calculations"
- **Evgenii Vladimirov** *(Rotterdam, Netherlands):* "iCOS: Option-implied COS method"

Hypatia Room: Financial Modeling *(chair: Griselda Deelstra)*

- **Griselda Deelstra** *(ULB, Brussels, Belgium):* "Consistent asset modelling with randomness in the coefficients and switches between regimes"
- **Donatien Hainaut** *(U. Louvain-la-Neuve, Belgium):* "A mutually exciting rough jump-diffusion for financial modelling"
- **Edouard Motte** *(U. Louvain-la-Neuve, Belgium):* "Partial hedging in rough volatility models"
- **Iñigo Arregui** *(U. A Coruña, Spain):* "Models and numerical methods for XVA pricing under mean reversion spreads in a multicurrency framework"

Ada Room: Optimization and pricing in finance and actuarial science *(chair: Maria do Rosário Grossinho)*

- **Ying Ni** (Mälardalens U., Västerås, Sweden)*:* "X Hedging: An explainable artificial intelligence hedging framework"
- **Anthony Britto** *(Karlsruhe Institute of Technolog, Germany):* "Some practical considerations for regression methods for stochastic control problems involving utility functions"
- **Manuel Guerra** *(ISEG & Management Universidade de Lisboa, Portugal):* "Optimal reinsurance under the Parisian ruin criterion"
- **Carlos Oliveira** *(Norwegian U. Science and Technology, Norway):* "How to manage the occurrence of adverse events: adopting risk mitigation measures or exiting?"

15:40 – 16:00: Coffee/tea break

Chair: Antonis Papapantoleon

16:00 – 16:45: Turing Room: Plenary 3: **Christian Bayer** *(WIAS, Berlin, Germany):* "Primal and dual optimal stopping with signatures"

16:50 – 18:05: Contributed talks 1 (3 presentations), 3 rooms

Turing Room: Stochastic volatility models *(chair Iñigo Arregui)*

- **Wei Xu** *(Toronto, Canada):* "VIX option pricing for nonparameter Heston stochastic local volatility model"
- **Stefano De Marco** *(Ecole polytechnique, Palaiseau Cedex, France):* "Evaluating skew-stickiness under stochastic and rough volatility"
- **Sarath Kumar Jayaraman** *(Calgary, Canada):* "A general option pricing framework for affine fractionally integrated models"

Euler Room: Jump processes *(chair: Alvaro Leitao Rodriguez)*

- **Josep Vives** *(U. Barcelona, Spain):* "Approximate option pricing under jump-diffusion stochastic volatility models based on a Hull and White type formula"
- **Ruben Bosch** *(ING Bank, Amsterdam, NL):* "Improved VaR/ES backtesting by using self-exciting point processes"

- **Burcu Aydogan** *(RWTH Aachen, Germany):* “Optimal investment strategies under the relative performance in jump-diffusion markets”

Hypatia Room: Calibration *(chair: Emmanuel Gobet)*

- **Bouazza Saadeddine** *(Crédit Agricole, France):* “Fast calibration using complex-step Sobolev training”
- **Guido Gazzani** *(Ecole des Ponts ParisTech,Marne la Vallée, France):* “Pricing and calibration of path-dependent volatility models”
- **Maria Olympia Tsianni** *(Oxford U., UK):* “Convergence of the Euler–Maruyama particle scheme for a regularised McKean–Vlasov equation arising from the calibration of local-stochastic volatility models”

Wednesday, April 3rd

Morning:

Chair morning session: Matthias Ehrhardt

9:00 – 9:45 : Turing Room: Plenary 4: **Roxana Dumitrescu** (King's College, London, UK): “ The linear programming formulation for control/stopping mean-field games: theoretical and numerical aspects”

9:45 – 10:30: Turing Room: Plenary 5: **Lech Grzelak** *(Utrecht U. and Rabobank, NL):* **“**Beyond affine models: On inclusion of random parameters in pricing models”

10:30 – 11:00: Coffee break

11:00 – 12:40: Mini-symposia session 3 (4 presentations), 3 rooms

Turing Room: Stochastic Optimal Control Problems: New algorithms and new applications *(chair: Yuying Li)*

- **Margaret Insley** *(U. Waterloo, Canada):* “Environmental bonds and public liability for resource extraction site cleanup”
- **Zhipeng Huang** *(Utrecht, NL):* “Convergence of the deep BSDE method for a coupled FBSDE system”
- **Christoph Reisinger** *(Oxford U., UK):* “K-nearest-neighbor resampling for off-policy evaluation with applications to trade execution and market making”
- **Yuying Li** *(U. Waterloo, Canada):* “Optimal allocation under constraints using NN without dynamic programming”

Euler Room: Recent advances in transform (Fourier/Laplace) methods for computational finance and insurance, part II *(chair: Antonis Papapantoleon)*

- **Laura Ballotta** *(Bayes, London, UK):* "Time changes, Fourier transforms and the joint calibration to the S&P500/VIX smiles"
- **Chiheb Ben Hammouda** *(Utrecht, NL):* "Empowering Fourier-based pricing methods through quasi-Monte Carlo and domain transformation techniques"
- **Gero Junike** *(Oldenburg, Germany):* "The multidimensional COS method for option pricing."
- **Fang Fang** ***(****Delft and FF Quant, NL):* "A cosine tensor network for pricing European, barrier and Bermudan options under rough Heston's model"

Hypatia Room: Computational Finance II *(chair: Kristian Debrabant)*

- **Michal Wronka** *(Wroclaw, Poland):* "Modelling of interest rate volatilities with GARCH processes"
- **Lyuben Valkov** *(Ruse, Bulgaria):* "Numerical solution of volatility recovery problems in option pricing"
- **Slavi Georgiev** *(Ruse, Bulgaria):* "Computational recovery of the time-dependent volatility of volatility in the Heston model"
- **Anna Clevenhaus** *(Wuppertal, Germany):* "A gradient-based calibration of the Heston model on real life data"

12:45 – 13:30 Lunch

Afternoon:

Chair: Christoph Reisinger

13:45 – 14:30: Turing Room: Plenary 6: **Blanka Horvath** (Oxford U., UK): "Pathwise methods and generative models for pricing and trading"

14:30 – 14:45: Coffee/tea break

14:45 – 16:15: Turing Room: Festivity Peter Forsyth's age 70! (chair Kees Oosterlee)

Chair: Christoph Reisinger

16:30 – 17:15: Turing Room: Plenary 7: **Peter Forsyth** *(U. Waterloo, Canada):* "Decumulation of retirement savings: Are modern tontines the solution?"

Followed by drinks, celebration party 17:30-19:00

Thursday, April 4th

Morning:

Chair morning session: Pasquale Cirillo

9:00 – 9:45 : Turing Room: Plenary 8: **Irene Monasterolo** *(Utrecht U., NL):* **"**Climate credit risk and corporate valuation"

9:45 – 10:00: Coffee break

10:00 – 11:40: Mini-symposia session 4 (4 presentations), 4 rooms

Turing Room: Machine Learning methods in Finance II *(chair: Costas Smaragdakis)*

- **Jasper *Rou*** *(Delft U., NL):* "Deep gradient flow methods for option pricing in diffusion models"
- **Ruben Wiedemann** *(Imperial College London, UK):* "Neural operators for implied volatility smoothing"
- **Kristoffer Andersson (Utrecht, NL)** "A robust deep learning method for fully coupled FBSDEs"
- **Urban Ulrych** *(EPFL, Swiss Finance Institute, Switzerland):* "Smart kernel factors"

Euler Room: Climate risk and financial risk impact *(chair: Aurélien Alfonsi)*

- **Aurélien Alfonsi** *(Ecole des Ponts, France):* "Risk valuation of quanto derivatives on temperature and electricity."
- **Florian Bourgey** *(Bloomberg, USA):* "Climate risk assessment of a large-sized credit portfolio"
- **Elisa Ndiaye** *(Ecole Polytechnique and BNP Paribas, France):* "Optimal business model adaptation plan for a company under a transition scenario"
- **Jörg Müller** *(Chemnitz, Germany):*"Credit value-at-risk in the context of ESG"

Hypatia Room: Computational Finance III *(chair: Lyuben Valkov)*

- **Ray Ruining Wu (***U. Toronto, Canada):* "The sparse grid combination method for multidimensional Black-Scholes partial differential equations"
- **Daniel Sevcovic** *(U. Bratislava, Slowakia):* "Multidimensional linear and nonlinear partial integro-differential equation in Bessel potential spaces with application in option pricing"
- **Pascal Halffmann** *(Kaiserslautern, Germany):* "Risk management in portfolio optimization: A multicriteria approach"
- **Neda Bagheri** *(U. Bratislava, Slowakia):* "A comparison study of ADI and ADE methods of the Black-Scholes equation on option pricing"

Ada Room: Stochastic Modeling and Complex System Methods in Finance *(chairs: Drona Kandhai, Sven Karbach, and Simon Trimborn)*

- **Drona Kandhai** *(U. Amsterdam and ING Bank, NL):* "Recent advances in WWR modeling for xVAs"
- **Simon Trimborn** *(U. Amsterdam, NL):* "Influential assets in large-scale vector auto-regressive models"
- **Sven Karbach** *(U. Amsterdam, NL):* "Dependency modeling in renewable energy markets"
- **Ioannis Anagnostou** *(European Investment Bank – EIB, Luxembourg):* "Network modeling methods for portfolio credit risk"

11:40 – 13:00: Contributed talks 2 (3 presentations), 4 rooms

Turing Room: Portfolios *(chair: Peter Forsyth)*

- **Cyril Izuchukwu Udeani** *(U. Bratislava, Slowakia):* "Approximating the solution operator of nonlinear parabolic equations arising from portfolio selection using deep learning."
- **Eva Lütkebohmert** *(U. Freiburg, Germany):* "Deep learning name concentration risk in loan portfolios of multilateral development banks"
- **Jari Toivanen** *(Jyväskylä, Finland):* "Monte Carlo based portfolio optimization"

Euler Room: Insurance / Finance *(chair: Luis Ortiz Gracia)*

- **Koos Gubbels** *(Achmea, Tilburg U, NL.):* "Principal component copulas for capital modeling"
- **Naoyuki Ishimura** *(Chuo U., Tokyo, Japan):* "Insurance design against epidemic outbreaks involving Cramér-Lundberg model"
- **Pasquale Cirillo** *(ZHAW, Zürich, Switzerland):* "Probability pas de deux in finance: connecting two probability measures via non-Newtonian calculus"

Hypatia Room: Monte Carlo methods *(chair: Tony Ware)*

- **Michele Azzone** *(Milano, Italy):* "A fast Monte Carlo scheme for additive processes and option pricing"
- **Maria Kalicanin Dimitrov** *(Mälardalen U., Sweden):* "Almost-exact scheme for Heston-type models: American and Bermudan option pricing"
- **Luca Gonzato** *(Vienna, Austria):* "Bayesian calibration of option pricing models using sequential Monte Carlo samplers"

Ada Room: Model-free methods, uncertainty *(chair: Roxana Dumitrescu)*

- **Antonis Papapantoleon** (Delft, Netherlands): "Model-free and data driven methods in mathematical finance"
- **Rodolphe Vanderveke** *(UCLouvain, Belgium):* "Optimal diversification under parameter uncertainty"

- **Afrasiab Kadhum** *(Ortec F, Rotterdam, NL):* "Creating model agnostic prediction intervals"

13:00 – 14:00 Lunch

Afternoon:

14:00 – 15:15: Contributed talks session 3 (3 presentations), 4 rooms

Turing Room: Climate, ESG *(chair: Irene Monasterolo)*

- **Davide Trevisani** *(CITIC, A Coruña, Spain):* "Scope 3 capital design for carbon-emissions-facilitation tax risk"
- **Serine Guichoud** *(Ecole des Ponts, Université Paris-Saclay, France):* "Physical propagation of climate extremes across global value chains"
- **Christian Kappen** *(d-fine, Frankfurt, Germany):* "The Power of derivatives: Pricing and hedging of power purchase agreements and power options"

Euler Room: Hedging *(chair: Alessandro Gnoatto)*

- **Carlo Sgarra** *(Bari, Italy):* "Semi-static variance-optimal hedging with self-exciting jumps"
- **Balint Negyesi** *(Delft U., NL):* "A deep BSDE approach for the simultaneous pricing and delta-gamma hedging of portfolios consisting of high dimensional multi-asset Bermudan options"
- **Leonardo Perotti** *(Utrecht U., NL):* "Modelling and hedging the prepayment option for fixed interest rate mortgages"

Hypatia Room: Market features *(chair: Fenghui Yu)*

- **Yerkin Kitapbayev** *(Abu Dhabi, UAE):* "Valuation of equity and debt with finite maturity using local time"
- **Giovanni Amici** *(Torino, Italy):* "Time-inhomogeneity in currency triangles"
- **Aditya Nittur Anantha** *(IISc Bangalore, India):* "Measuring and filtering noise in high frequency order flow"

Ada Room: Selection, Identification *(chair: Long Teng)*

- **Arnaud Germain** *(UCLouvain, Belgium):* "Loan selection for collateralized debt obligations: minimizing the cost of capital release"
- **Nikeethan Selvaratnam** *(BNP Paribas, Polytechnique de Paris, France):* "Modeling dependency between operational risk losses and macroeconomic variables using hidden Markov triplets"

- **Dorinel Bastide** *(BNP Paribas and Ecole polytechnique, France*): “Takers identification for defaulted portfolios with simulated annealing algorithms’’

15:30 – Afternoon/Evening: Excursion plus conference dinner, on a boat through the Amsterdam canals, dinner in restaurant “Kop van Oost”

Friday April 5th

Morning:

9:00 – 10:40: Mini-symposia session 5 (4 presentations), 4 rooms

Turing Room: Crypto-Finance *(chair: Julien Prat)*

- **Emmanuel Gobet** *(IP Paris, France):* “Robust aggregation of crypto data”
- **Evgeny Lyandres** *(Tel Aviv U., Israel):* “Does market efficiency impact capital allocation efficiency? The case of decentralized exchanges”
- **Andrea Canidio** *(Cow Protocol):* “Combinatorial auctions with fairness concerns: The case of blockchain trade-intent auctions”
- **Julien Prat** *(IP Paris, France):* “Systemic risk in decentralized lending protocols”

Euler Room: Recent advances in MLMC methods for computational finance and Financial Risk management *(chair: Chiheb Ben Hammouda)*

- **Jonathan Spence** *(Edinburgh, UK):* “Hierarchical and adaptive methods for accurate and efficient risk estimation”.
- **Azar Louzi** *(LPSM, Université Paris Cité, France):* “Adaptive multilevel stochastic approximation of the Value-at-Risk and expected shortfall”
- **Tony Ware** *(Calgary, Canada, and Cardiff, UK)*: “Weighted multilevel Monte Carlo”
- **Josha Dekker** *(U. Amsterdam, NL):* “Optimal stopping with randomly arriving opportunities to stop”

Hypatia Room: Computational Finance IV, Energy Markets *(chair: Matthias Ehrhardt)*

- **Carlos Vazquez Cendon** *(A Coruña, Spain):* “Modelling and numerical methods for pricing in renewable energy certificates markets”
- **Joanna Janczura** *(Wroclaw, Poland):* “Product of VAR time series with an application to electricity load prediction errors”
- **Arkadiusz Lipiecki** *(Wroclaw, Poland):* “Probabilistic forecasting of electricity prices with isotonic regressions”
- **Tomasz Weron** *(Wroclaw, Poland):* “Bootstrap-based forecasts in battery charging strategies”

Ada Room: Interest rate models *(chair: Lech Grzelak)*

- **Jose German López-Salas** *(A Coruña, Spain):* "PDEs for pricing interest rate derivatives under the new generalized Forward Market Model (FMM)"
- **Thomas van der Zwaard** *(Rabobank, Utrecht U., NL):* "Short-rate models with smile and applications to Valuation Adjustments"
- **Riccardo Brignone** *(U. Freiburg, Germany):* "Exact simulation of the Hull and White stochastic volatility model"
- **Guido Germano** *(UC London, UK):* "Matrix and vector Heston stochastic volatility models with stochastic interest rates"

10:45 – 11:15: Coffee break

11:15 – 12:30: Turing Room, **Industrial panel:** ***New trends in academic finance, industrial finance, climate finance, need for machine learning, comp. methods in industry*** *(moderator: Mike Staunton)*

Panel: **prof. Irene Monasterolo** (Climate Finance, Utrecht University), **Dr. Fang Fang** (FFQuant and Delft U.), **Dr. Roger Lord** (Cardano), **Dr. Diederik Fokkema** (EY*)*

12:30 – 13:30: Lunch

Afternoon:

13:30–14:45: Mini-symposia session 6 (4 presentations), 3 rooms

Turing Room: Stochastic volatility models *(chair: Karel In 't Hout)*

- **Simona Sanfelici** *(Parma, Italy): "*Identifying the number of latent factors of stochastic volatility models"
- **João Guerra** *(ISEG-Lisbon and U. de Lisboa, Portugal):* "Stochastic Volterra rough volatility models and Markovian approximations"
- **Léo Parent** *(PRISM Sorbonne, France):* "Rough path-dependent volatility models"

Euler Room: Investment, strategies *(chair: Christina Christara)*

- **David Itkin** *(Imperial College London, UK):* "Are linear strategies nearly optimal when trading with superlinear frictions?"

- **Cláudia Nunes** *(Univ. Lisboa and CEMAT, Portugal):* “Innovation and product positioning in a monopoly”
- **Pietro Manzoni** *(Milano, Italy):* “Managing overconfidence in time series probabilistic forecasting with an application to electricity load”

Hypatia Room: Computational Finance V *(chair: Daniel Sevcovic)*

- **Kristian Debrabant** *(Odense U., Denmark):* “Weak second-order stochastic Runge-Kutta methods with optimal stage number”
- **Eike Brinkop** *(Reading, UK):* “Deep learning for pricing time contextual data”
- **Rayan Ayari** *(Zeppelin U., Germany):* “Beyond the efficient frontier and 1/N: How to beat the market with deep reinforcement”

15:00: Closing of ICCF24