Quantum Computing Applications
in Economics and Finance

April 11, 2025 - University of Pennsylvania

Jesús Fernández-Villaverde, University of Pennsylvania
Eric Ghysels, University of North Carolina - Chapel Hill and Kenan-Flagler Business School
Isaiah Hull - CogniFrame, DeepLearning.AI, Rethinc. Labs UNC

8:30 am – 9:00	Breakfast and registration
9:00 am – 9:05	Welcome
	Chair: Eric Ghysels
9:05 am – 10:00	Keynote speaker: Stefan Woerner (IBM Quantum)
	Accelerating Towards Quantum Advantage in Finance
10:00 am – 10:15	Break
10:15 am – 10:45	Dar Gilboa (Google Quantum AI), Siddhartha Jain (UT Austin), Jarrod McClean (Google Quantum AI)
	Consumable Data via Quantum Communication
10:45 am – 11:15	Dinh-Long Vu (National University of Singapore), Bin Cheng (National University of Singapore), Patrick Rebentrost (National University of Singapore)
	Low-depth amplitude estimation without really trying
11:15 am – 11:45	Jesús Fernàndez-Villaverde (University of Pennsylvania), Isaiah Hull (CogniFrame, DeepLearning.AI, Rethinc. Labs UNC)
	Dynamic Programming in Economics on a Quantum Annealer

11:45 am – 12:15	Atithi Acharya (JP Morgan), Romina Yalovetzky (JP Morgan), Pierre Minssen (JP Morgan), Shouvanik Chakrabarti (JP Morgan), Ruslan Shaydulin (JP Morgan), Rudy Raymond (JP Morgan), Yue Sun (JP Morgan), Dylan Herman (JP Morgan), Ruben S. Andrist (Amazon), Grant Salton (Amazon, Caltech), Martin J. A. Schuetz (Amazon), Helmut G. Katzgraber (Amazon), Marco Pistoia (JP Morgan) **Decomposition Pipeline for Large-Scale Portfolio Optimization with Applications to Near-Term Quantum Computing**
12:15 pm – 1:00 pm	Lunch
	Chair: Isaiah Hull
1:00 pm – 1:30	Sangram Deshpande (North Carolina State University), Elin Ranjan Das (North Carolina State University), Frank Mueller (North Carolina State University) **Currency Arbitrage Optimization using Quantum Annealing, QAOA and Constraint Mapping**
1:30 pm – 2:00	Sofia Riazhkina (Bank of Canada), Samuel Palmer (Multiverse Computing), Pablo Martin-Ramiro (Multiverse Computing), Roman Orus (Multiverse Computing), Samuel Migel (Multiverse Computing), Vladimir Skavysh (Bank of Canada) **Digital Payments in Firm Networks: Theory of Adoption and Quantum Algorithm**
2:00 pm – 2:30	Valerio Astuti (Bank of Italy), Adriano Baldeschi (Bank of Italy), Luca Bastianelli, Giuseppe Bruno (Bank of Italy), Ajit Desai (Bank of Canada), Danica Marsden (Bank of Canada), Riccardo Russo (Bank of Italy) **Liquidity Optimization in Gross Settlement Systems with Quantum Reordering: Application to TARGET2**
2:30 pm – 3:00	Francesco Martini (University of Verona), Daniele Lizzio Bosco (University of Udine), Carlo Barbanera (Bank of Italy), Serena Bernardini (Bank of Italy), Giuseppe Bruno (Bank of Italy), Giacomo Ranieri (Intesa Sanpaolo), Francesca Cibrario (Intesa Sanpaolo), Davide Corbelletto (Intesa Sanpaolo), Alessandra Di Pierro (University of Verona), Luca Dellantonio (University of Exeter)

	Securities Transaction Settlement Optimization on Superconducting Quantum Devices
3:00 pm – 3:15	Break
	Chair: Jesús Fernàndez-Villaverde
3:15 pm – 3:45	Vanio Markov (Wells Fargo), Vladimir Rastunkov (IBM Quantum, IBM Research)
	Quantum Channels as Limit Order Book Generative Models
3:45 pm – 4:15	Faisal Shah Khan (Taqtics and Rethinc.Labs UNC), Norbert M. Linke (Duke University), Anton Trong Than (University of Maryland), Dror Baron (NC State University)
	Quantum Advantage in Trading: A Game-Theoretic Approach
4:15 pm – 4:30	Break
4:30 pm – 5:00	Noorain Noorani (University of Maryland), Valerio Astuti (Bank of Italy), Giuseppe Bruno (Bank of Italy), Lerby Ergun (Bank of Canada), Vladimir Skavysh (Bank of Canada)
	Simulating Economic Fat-Tailed Distributions with the Quantum Boltzmann Machine
5:00 pm – 5:30	Eric Ghysels (UNC Chapel Hill), Jack Morgan (UNC Chapel Hill), Hamed Mohammadbagherpoor (IBM)
	On Quantum and Quantum-Inspired Maximum Likelihood Estimation and Filtering of Stochastic Volatility Models