

Quantum Autumn School 2025		
Date: Nov 3-7, 2025	location: RISE KTH at "Innoversum" room	organisers: ENCCS, NCC Denmark, NCC Lithuania

		Monday 3rd	Tuesday 4th	Wednesday 5th	Thursday 6th	Friday 7th
slot 1	9:00–10:00	arrival and coffee 8:30-9:15	Introduction to variational quantum algorithms: VQE, QAOA and beyond (QPE, ..., SQD) Juan de Gracia Triviño (ENCCS/RISE, SE)	Variational Algorithms; Designing use cases for near term quantum algorithms Panagiotis Barkoutsos (IonQ)	Scaling up ion trap quantum computers and quantum technologies; the case of IonQ Panagiotis Barkoutsos (IonQ)	Quantum Neural Networks Stefano Markidis (KTH, SE)
		Welcome! ENCCS & QAS2025 Introduction Karim Elgammal (ENCCS/RISE, SE) Introduction to MIMER AI Factory Thor Wikfeldt (MIMER/RISE, SE)				
slot 2	10:00–11:00	Introduction to the European Hybrid classical/quantum HPC+AI+QC ecosystem. LUMI-Q Quantum Flagship Mikael Johansson (CSC, FI)	In-depth description of variational quantum algorithms Juan de Gracia Triviño (ENCCS/RISE, SE)	Controlling a quantum computer using pulses Stefan Seegerer (IQM)	Atomistic simulations on quantum accelerated supercomputing Karim Elgammal, Marc Maußner (ENCCS/RISE, SE) (infoteam, DE)	hands-on QNNs using pennylane/classification (tutorial) Stefano Markidis (KTH, SE))
		coffee break 10:40-11:00	coffee break 10:40-11:00	coffee break 10:40-11:00	coffee break 10:40-11:00	coffee break 10:40-11:00
slot 3	11:00–12:00	Overview of the HPC/QC software stack, from ready-made Q-libraries for common tasks to circuit level assembly and hardware-level coding Miroslav Dobsicek	Opportunities for extending quantum computing through subspace, embedding and classical molecular dynamics techniques Thomas M. Bickley (UCL, UK)	LUMI-Q/VLQ presentation Miroslav Dobsicek	Accelerated Quantum Supercomputing using NVIDIA CUDA-Q Esperanza Cuenca-Gómez (NVIDIA)	Quantum Reservoir computing Ruben Pariente Bassa (SINTEF, NO)
		Lunch	Lunch	Lunch	Lunch	Lunch
slot 4	13:00–14:00	Quantum gates, circuits and algorithms Juan de Gracia Triviño (ENCCS/RISE, SE)	Getting started with algorithm development on actual quantum hardware using IQM Resonance Stefan Seegerer (IQM)	How to use quantum computers for biomolecular free energies Matthias Christandl (København U, DK)	Quantum error-correction (QEC) Mats Granath (Göteborg University)	closing The end
		Quantum gates and circuits Giulia Ferrini (MC2, Chalmers, WACQT, SE)	Developing quantum algorithms with qrisp, the next generation of quantum algorithm development Stefan Seegerer (IQM)	Pre-panel discussion Göran Wendin (RISE, SE) coffee break	Quantum kernel estimation with application to disability insurance Björn Löfdahl (SEB)	
slot 5	15:00–15:30	coffee break	coffee break	Towards 2045: Do we still only talk about Quantum superiority? Panel discussion Göran Wendin (RISE, SE)	coffee break	
		Quantum Information Theory introduction, building quantum algorithm, QFT, ... Stefano Markidis (KTH, SE)	interactive tutorial: experiments with quantum gates, circuits and algorithms (qiskit/qrips simulation) Juan de Gracia Triviño (ENCCS/RISE, SE)		interactive tutorial: Quantum error-correction (QEC) hands-on Moritz Lange (Göteborg University)	
slot 6	16:30–17:30	From qubits 2000 to Nobel Prize 2025 Göran Wendin (RISE, SE)	interactive tutorial: Execution of variation algorithms examples Speaker	PechaKucha presentations	interactive tutorial: Quantum kernel estimation with application to disability insurance Björn Löfdahl (SEB)	
		Reception, mingling		Buffé dinner		
slot 7	18:00–20:00					