

Quantum Autumn School 2025		
Date: Nov 3-7, 2025		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 8:30-9:20	coffee/sandwich 8:30-9:00	coffee/sandwich 8:30-9:00	coffee/sandwich 8:30-9:00	coffee/sandwich 8:30-9:00
		Welcome! QAS2025 Introduction Karim Elgammal (ENCCS/RISE, SE)	Introduction to variational quantum algorithms: VQE, QAOA and beyond (QPE, ..., SQD)	Variational Algorithms; Designing use cases for near term quantum algorithms	Scaling up ion trap quantum computers and quantum technologies; the case of IonQ	Quantum Neural Networks
slot 2	10:00-11:00	MIMER AI Factory Thor Wikfeldt (MIMER/RISE, SE)	Juan de Gracia Triviño (ENCCS/RISE, SE)	Panagiotis Barkoutsos (IonQ)	Panagiotis Barkoutsos (IonQ)	Stefano Markidis (KTH, SE)
		Introduction to the European Hybrid classical/quantum HPC+AI+QC ecosystem. LUMI-Q Quantum Flagship 10:00-10:40 Mikael Johansson (CSC, FI)	interactive tutorial: experiments with quantum gates, circuits and algorithms (qrisp simulation) 10:00-10:40 Juan de Gracia Triviño (ENCCS/RISE, SE)	Controlling a quantum computer using pulses 10:00-10:40 Stefan Seegerer (IQM)	Atomistic simulations on quantum accelerated supercomputing 10:00-10:40 Karim Elgammal, Marc Maußner (ENCCS/RISE, SE) (infoteam, DE)	hands-on QNNs using pennylane/classification (tutorial) 10:00-10:40 Stefano Markidis (KTH, SE))
slot 3	11:00-12:00	coffee break 10:40-11:00	coffee break 10:40-11:00	coffee break 10:40-11:00	coffee break 10:40-11:00	coffee break 10:40-11:00
		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)
slot 4	12:00-13:00	Lunch	Lunch	Lunch	Lunch	Lunch
		Lunch	Lunch	Lunch	Lunch	Lunch
slot 5	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
	14:00-15:00	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)	Quantum kernel estimation with application to disability insurance Björn Löfdahl (SEB)	The end
slot 6	15:00-15:30	coffee break	coffee break	coffee break	coffee break	
	15:30-16:30	Quantum Information Theory introduction, building quantum algorithm, QFT, ... Stefano Markidis (KTH, SE)	QAOA - theory Ruben Pariente Bassa (SINTEF, NO)	Towards 2045: Do we still only talk about Quantum superiority? Panel discussion Göran Wendin (RISE, SE)	interactive tutorial: Quantum error-correction (QEC) hands-on Moritz Lange (Göteborg University)	
slot 7	16:30-17:30	From qubits 2000 to Nobel Prize 2025 Göran Wendin (RISE, SE)		PechaKucha presentations (in-person only)	interactive tutorial: Quantum kernel estimation with application to disability insurance Björn Löfdahl (SEB)	
	18:00-20:00	Reception, mingling		Buffé dinner		