Nordic Quantum Autumn School 2025 (draft timetable)

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 9:00-9:30 **Welcome & Introduction to QAS2025** 9:00-10:00 Thor Wikfeldt (ENCCS/RISE, SE)	**Introduction to variational quantum algorithms: QAOA** Franz Fuchs (SINTEF, UiO, NO)	**Introduction to variational quantum algorithms: VQE and beyond (QPE, ..., SQD)** Juan (ENCCS, RISE, SE)	**introduction toTrapped-ion** Panagiotis Barkoutsos (IonQ)	**Quantum Neural Networks** Stefano Markidis (KTH, 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: QAOA** 10:00-10:40 Franz Fuchs (SINTEF, NO) coffee break 10:40-11:00	**VQE applied to use cases for quantum chemistry/drug discovery: in-depth description of specific use case** 10:00-10:40 Panagiotis Barkoutsos (IonQ) coffee break 10:40-11:00	**Atomistic simulations on quantum accelerated supercomputing** 10:00-10:40 Karim (ENCCS/RISE, SE) coffee break 10:40-11:00	**hands-on QNNs using pennylane/classification (tutorial)** 10:00-10:40 Stefano Markidis (KTH, SE) 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** EuroQHPC Miroslav Dobsicek (Chalmers Next Labs, SE)	**Getting started with algorithm development on actual quantum hardware using IQM Resonance** Stefan Seegerer (IQM)	**High Ground State Overlap via Quantum Embedding Methods** Matthias Christandl (København U, DK)	**Accelerated Quantum Supercomputing using NVIDIA CUDA-Q** Esperanza Cuenca-Gómez	**Quantum Reservoir computing** Ruben Pariente Bassa (SINTEF, NO)
	12:00-13:00	Lunch	Lunch	Lunch	Lunch	Lunch
slot 4	13:00-14:00	**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)	**Controlling a quantum computer using pulses** Stefan Seegerer (IQM)	**Quantum error-correction (QEC)** Mats Granath (Göteborg University)	**Towards 2045: Do we still talk about Quantum superiority?** Panel discussion
slot 5	14:00-15:00	**Quantum gates, circuits and algorithms** Giulia Ferrini, Laura Garcia Alvarez (MC2, Chalmers/WACQT, SE)	**interactive tutorial:** experiments with quantum gates, circuits and algorithms (qiskit simulation) tutorial, simulation (Laura)	**interactive tutorial on the devices (LUMI-Q/IQM devices)** Stefan Seegerer (IQM)	**quantum monte carlo and quantum finance** Björn Löfdahl (SEB)	closing The end
	15:00-15:30	coffee break	coffee break	coffee break	coffee break	
slot 6	15:30-16:30	**Quantum Information Theory introduction, building quantum algorithm, QFT, ...** Stefano Markidis (KTH, SE)	**interactive tutorial:** Execution of simple examples on optimisation with QAOA (simulation) hands-on (Franz)	**interactive tutorial:** experiments with quantum gates and quantum circuits for VQE (simulation) tutorial, Juan	**interactive tutorial:** Quantum error-correction (QEC) hands-on Mats Granath team (Göteborg University)	
slot 7	16:30-17:30	**Quantum error mitigation (QEM) applied to simulation of physical systems** Göran Wendin (RISE, SE)		**interactive tutorial:** Execution of simple quantum chemistry examples using VQE on simulation vs. LUMI-Q/IQM hands-on (IQM team)	**interactive tutorial:** Quantum finance, Classical Monte Carlo on a QC, Quantum Amplitude Estimation (QAE) Björn Löfdahl & team	
	18:00-20:00	Reception, mingling		Buffé dinner	PechaKucha presentations and posters	