

List of topics for the interdisciplinary seminar on

Quantum algorithms and their classical counterpart

(08.128.80125 Seminar (M.Sc.) – Quantenphysik)

SS2024 Seminarraum 1 Kernphysik

Datum	Thema	Supported by	Student
16.4	Presentation of the subject and the workflow Selection of topics by the students	F. Schmidt-Kaler	-
30.4	Bits and qubits, gates and quantum gates, DiVincenzo criteria, classical and quantum computer platforms	F. Schmidt-Kaler	Florian Zacherl
30.4	Classical measurement techniques of magnetic field, and advantages using a single quantum object	A. Wickenbrock	Muthubharathi
7.5	Classical and quantum computing paradigms: circuits, compilers	F. Kreppel / U. Poschinger	Sebastian Schultheis
14.5	Classical communication in fibres by light and quantum protocols with single photons like BB84- and Eckart	P. van Loock	Dimitra Cristea / Melina Martin
21.5	Secure transmission: Post quantum cryptography and quantum repeaters	P. van Loock	Paula Banus / Roman Rosenfeld
28.5.	Measurement in classical and quantum, measurement-based quantum computing and phase transitions	J. Marino	Yanis Abdedou
4.6	Classical annealing, quantum annealing and applications	M. Blumenstock	Pablo Guevara / Pascal Janowski
11.6	Classial fast Fourier analysis, quantum Fourier transformation and its applications	P. van Loock	Nico Bötcher
18.6	Factorization of large numbers and quantum Shor Algorithm	P. van Loock	Sayan Roy / Khang Vi Becker
25.6	Classical and quantum error correction	U. Poschinger	Mohammadreza Nematollahi
9.7	Artificial intelligence in the quantum version	D. Millán / F. Schmidt-Kaler	Tim Körner
16.7	free		

left	Arrays of parallel processed qubits in Rydberg processors	R. Pohl	
left	Variational optimization in classical and quantum versions	Ch. Melzer / J. Hilder	