



# IMPRS for Quantum Science and Technology

## Courses for the curriculum

Lecture	Institution	Lecturer / Module responsible	Term
Advanced Concepts of Quantum Computing	TUM	Mendl	SS
Advanced Methods in Quantum Many-Body Theory	TUM	Knolle	SS
Advanced Quantum Field Theory	TUM	Weiler	SS
Advanced Statistical Physics	LMU	Grusdt	SS
Advanced Topics in Quantum Information Theory	TUM	Kraus	SS
Advanced Topics of Quantum Computing (Seminar)	TUM	Mendl	SS / WS
Advanced Topics in the Theory of Quantum Matter (Seminar)	TUM	Classen / Knap/ Knolle / Pollmann	SS / WS
Applications of Quantum Computing	LMU	Lorenz	SS
Applied Quantum Mechanics	TUM	Garbrecht	WS
Applied Superconductivity	TUM	Gross / Fedorov	SS
Cavity-, Circuit- and Waveguide QED (Seminar)	TUM	Rabl	SS
Computational Methods in Many-Body Physics	TUM	Knap / Pollmann	SS
Condensed Matter Many Body Physics and Field Theory I	LMU	Grusdt / Tu / Pollet	SS
Condensed Matter Many Body Physics and Field Theory II	LMU	Grusdt / Tu / Pollet	WS
Deep Learning for Physicists	LMU	Krausz / Kepesidis	WS
Experimental Techniques in Quantum Optics	LMU	Aidelsburger	SS
Few-Body Quantum Physics	LMU	Grusdt	
Groups and Lie-algebras	LMU	Brunner	SS
High Temperature Superconductivity (Seminar)	LMU	Von Delft	WS
Information Theory and Information Field Theory	LMU	Enßlin	SS
Introduction to Quantum Computing	TUM	Mendl	WS
Introduction to Quantum Gravity	LMU	Oriti	SS
Machine Learning	TUM	Günemann	WS
Many Body Physics with Ultracold Quantum Gases	LMU	Fölling	SS
Mathematical Quantum Mechanics	LMU	Hainzl / Scrinzi	WS
Mathematical Quantum Mechanics II	LMU	Nam	SS
Mathematical Statistical Physics	LMU	Jansen	SS
Nano- and Optomechanics	TUM	Poot	WS
Nanotechnologies	TUM	Kobl Müller	WS
Non-Equilibrium Dynamics of Quantum Many-Body Systems	TUM	Knap	WS
Numerical Quantum Physics	LMU	Paeckel	SS
Operator Theory	TUM	Warzel	SS
Photonics and Ultrafast Physics 1	TUM	Kienberger	WS
Photonic Quantum Technologies	TUM	Müller	SS
QST Experiment: Quantum Hardware	LMU	Allen	WS

Lecture	Institution	Lecturer / Module responsible	Term
QST Theory: Quantum Information	TUM	Schilling	WS
Quantum Algorithms and Applications (Seminar)	TUM	Kraus	WS
Quantum Computation and Simulation with Ultracold Matter (Seminar)	LMU	Hilker / Zeiher	WS
Quantum Computing and Quantum Simulation with Atoms	LMU	Aidelsburger	SS
Quantum Computing with Superconducting Qubits	TUM	Filipp	SS
Quantum Entrepreneur Laboratory	TUM	Filipp/Pollmann/Mendl/Wille	SS
Quantum Error Correction and Fault Tolerance for Computing and Communication	TUM	Knap / Trivedi	SS
Quantum Field Theory	TUM / LMU	Beneke / Buchalla / Sachs	WS / SS
Quantum Field Theory in Curved Spaces	LMU	Helling	WS
Quantum Information and Entanglement	LMU	Paredes	WS
Quantum Information Theory meets Quantum Many Body Physics	LMU	Schilling	SS
Quantum Magnetism	TUM	Knapp	WS
Quantum Many Body Physics	TUM	Knap / Pollmann	WS
Quantum Mechanics II	LMU	Halimeh	WS
Quantum Optics I	LMU	Aidelsburger / Zeiher	WS
Quantum Optics II	LMU	Zeiher	SS
Quantum Optoelectronics	LMU	Högele	SS
Quantum Optomechanics	TUM	Weig	SS
Quantum Simulation: Theory and Applications	LMU	Halimeh	SS
Quantum Sensing	TUM	Bucher	WS
Quantum Statistical Inference	TUM	Wolf	SS
Representation of Compact Groups	TUM	König	SS
Scaling, Criticality and the Renormalization Group in Statistical Physics	TUM	Knolle	WS
Scattering Theory	LMU	Scrinzi	SS
Semiconductor Quantum Devices	TUM	Finley	WS
Solid State Spectroscopy	TUM	Finley	WS
Spin Qubits	TUM	Reiserer	SS
Statistical Mechanics and Thermodynamics	TUM	Pollmann	WS
Superconducting Quantum Circuits	TUM	Filipp/Gross	WS / SS
Superconductivity and Low Temperature Physics I	TUM	Gross / Huebl	WS
Superconductivity and Low Temperature Physics II	TUM	Gross / Huebl	SS
Tensor Networks	TUM/ LMU	Mendl/ Von Delft	SS
Theoretical Condensed Matter Physics	LMU	Tu	WS
Theoretical Quantum Optics	TUM	Rabl	SS
Theoretical Solid State Physics	TUM	Knap/ Pollmann	WS
Topological Electronics and Materials	TUM	Holleitner	SS
Topology and New Kinds of Order in Condensed Matter Physics	TUM	Pollmann	SS
Two Dimensional Materials	TUM	Holleitner	SS
Two Dimensional Semiconductors	LMU	Baimuratov	SS
Ultracold Quantum Gases I	TUM/ LMU	Aidelsburger/ Dürr/ Fölling	WS
Ultracold Quantum Gases II	TUM/ LMU	Aidelsburger/ Dürr/ Fölling	SS
Unconventional Superconductivity	TUM	Classen	SS