DPG Fall Meeting (FM)

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Overview of Invited Talks and Sessions

(Lecture rooms Audi Max, Aula, 1009, 1010, 1015, 1098, 1199, 2004, 2006, 3042, 3043, and 3044; Poster Tents and 1114)

Plenary Talks

FM 1.1	Mon	8:30– 9:30	Audi Max	**Tensor Networks for Classical and Quantum Machine Learning** — •Miles Stoudenmire
FM 25.1	Tue	8:30– 9:30	Audi Max	**Scalable quantum computing with trapped ion qubits** — •Ferdinand Schmidt-Kaler
FM 45.1	Wed	8:30– 9:30	Audi Max	**Quantum Technologies - Challenges and Chances from an Industry Perspective** — •Jürgen Gross
FM 68.1	Thu	8:30– 9:30	Audi Max	**Silicon Based Quantum Computing** — •Michelle Simmons
FM 88.1	Fri	8:30– 9:30	Audi Max	**What can be done with extreme entanglement?** — •Richard Cleve

Introductory Talks

FM 2.1	Mon	9:30–10:30	Audi Max	**Quantum Algorithms** — •Ronald de Wolf
FM 26.1	Tue	9:30–10:30	Audi Max	**Machine Learning** — •Katharina Morik
FM 46.1	Wed	9:30–10:30	Audi Max	**Quantum sensing enabled by diamond** — •Fedor Jelezko
FM 69.1	Thu	9:30–10:30	Audi Max	**Hybrid Spin-Superconducting Circuits for Spin-Sensing and Quantum Information** — Bartolo Albanese, Jessica-Fernanda Da Silva Barbosa, Emanuele Albertinale, Marianne Le Dantec, Vishal Ranjan, Moonjoo Lee, Milos Rancic, Emmanuel Flurin, Denis Vion, Patrice Bertet, •Daniel Esteve
FM 89.1	Fri	9:30–10:30	Audi Max	**Generation of pure quantum light in the solid-state** — •Pascale Senellart

Focus Talks

FM 4.1	Mon	11:00–12:00	2004	**Quantum simulation with ultracold atoms in optical lattices** — •Monika Aidelsburger
FM 28.1	Tue	11:00–12:00	2004	**An introduction to quantum spectroscopy** — •Frank Schlawin
FM 48.1	Wed	11:00–12:00	2004	**Photonic Quantum Memories and Interfaces** — •Hugues de Riedmatten
FM 71.1	Thu	11:00–12:00	2004	**Optimal control of quantum systems** — •Steffen J. Glaser

Invited Talks

FM 3.1	Mon	11:00–11:30	Aula	**Wann, wie und wozu sollte Quantenphysik an der Schule vermittelt werden?** — •Stefan Heusler
FM 3.2	Mon	11:30–12:00	Aula	**Neue Entwicklungen in der Quantenphysik - Neue Chancen für die Lehre** — •Martin Wilkens
FM 3.3	Mon	12:00–12:30	Aula	**Quanteninformation im Physikunterricht - eine neue Möglichkeit?** — •Gesche Pospiech
FM 3.4	Mon	12:30–13:00	Aula	**Quantenmechanik für Lehramtsstudierende** — •Thomas Filk
FM 7.4	Mon	14:45–15:15	1009	**Certification and estimation of quantum randomness** — •Stefano Pironio

FM 8.1	Mon	14:00–14:30	1010	**Quantum dots as sources for quantum light** — •Peter Michler
FM 10.1	Mon	14:00–14:30	1199	**Engineered electronic states in atomic lattices and hybrid 2D systems** — •Peter Liljeroth
FM 11.1	Mon	14:00–14:30	2004	**Correlations in many-body states: The simplest constraints for their distribution** — •Jens Siewert
FM 12.1	Mon	14:00–14:30	2006	**Quantum sensors with matter waves: geodesy, navigation and general relativity** — •Philippe Bouyer
FM 13.1	Mon	14:00–14:30	3042	**Quantum Information Concepts in Open Systems** — •Bassano Vacchini
FM 14.1	Mon	14:00–14:30	3044	**Quantum simulation and computation with spins in quantum dots** — •Uditendu Mukhopadhyay, Juan P Dehollain, Vincent P. Michal, Yao Wang, Bernhard Wunsch, Christian Reichl, Werner Wegscheider, Mark S. Rudner, Eugene Demler, Lieven M. K. Vandersypen
FM 18.1	Mon	16:30–17:00	1015	**Generation of strongly correlated photons using nanofiber-coupled atoms** — Adarsh Prasad, Jakob Hinney, Klemens Hammerer, Sahand Mahmoodian, Samuel Rind, Philipp Schneeweiss, Anders S. Sørensen, Jürgen Volz, •Arno Rauschenbeutel
FM 19.1	Mon	16:30–17:00	1199	**Topological superconductivity in full shell proximitized nanowires** — •Roman Lutchyn
FM 21.1	Mon	16:30–17:00	2006	**Generative training of quantum Boltzmann machines with hidden units** — •Nathan Wiebe, Leonard Wossnig
FM 22.1	Mon	16:30–17:00	3042	**Control Engineering Taken to the Limits of Quantum Systems Theory** — •Thomas Schulte-Herbrüggen, Ville Bergholm, Witlef Wieczorek, Michael Keyl
FM 23.1	Mon	16:30–17:00	3043	**Learning to violate Bell inequality with reinforcement learning** — •Alexey Melnikov, Pavel Sekatski, Nicolas Sangouard
FM 23.2	Mon	17:00–17:30	3043	**Quantum policy gradient methods for reinforcement learning** — •Sofiene Jerbi, Hans Briegel, Vedran Dunjko
FM 27.1	Tue	11:00–11:30	Audi Max	**Frontiers in quantum acoustics** — •Andrew Cleland
FM 27.2	Tue	11:30–12:00	Audi Max	**The state of the art of quantum key distribution.** — •Hugo Zbinden
FM 27.3	Tue	12:00–12:30	Audi Max	**Towards Quantum Communication Networks using Solid-State Quantum-Light Sources** — •Tobias Heindel
FM 27.4	Tue	12:30–13:00	Audi Max	**Towards quantum networks based on single trapped atoms** — •Wenjamin Rosenfeld
FM 30.1	Tue	14:00–14:30	Aula	**Quantum Sensors on the way to commercial opportunities** — •Kai Bongs
FM 31.1	Tue	14:00–14:30	1009	**Certifying randomness from quantum black-box devices** — •Nicolas Brunner
FM 32.1	Tue	14:00–14:30	1010	**Next-generation single-photon sources for satellite-based quantum communication** — •Tobias Vogl, Ruvi Lecamwasam, Ben C. Buchler, Yuerui Lu, Ping K. Lam, Falk Eilenberger
FM 33.1	Tue	14:00–14:30	1015	**Quantum Networking, fully connected and international** — •Rupert Ursin
FM 34.1	Tue	14:00–14:30	1199	**Understanding the Interplay between Magnetism and Topology** — •Matthew Gilbert
FM 36.1	Tue	14:00–14:30	2006	**Building Trust** — •Elham Kashefi
FM 39.1	Tue	14:00–14:30	3044	**Applications of Quantum Computing with Superconducting Qubits** — •Stefan Filipp
FM 47.1	Wed	11:00–11:20	Aula	**Enabling Industrial Quantum Technology** — •Michael Förtsch
FM 47.2	Wed	11:20–11:40	Aula	**An industry perspective on Quantum Technologies** — •Nils Trautmann
FM 47.3	Wed	11:40–12:00	Aula	**A proposal for a topological phase modulator with π Berry phase shift** — •Ulrich Gaubatz
FM 47.4	Wed	12:00–12:20	Aula	**Quantum Technologies in Thales** — •Thierry Debuisschert
FM 47.5	Wed	12:20–12:40	Aula	**Opticlock: Towards a transportable and user-friendly optical single-ion clock** — •Juergen Stuhler, opticlock Consortium
FM 47.6	Wed	12:40–13:00	Aula	**Quantum-dot based single photon sources: Commercialization of near optimal solid-state sources for Quantum Applications** — •Valerian Giesz, Niccolo Somaschi

FM 51.1	Wed	14:00–14:20	Aula	**Early-stage quantum computing in an industrial context** — •Florian Neukart
FM 51.2	Wed	14:20–14:40	Aula	**Quantum communication and quantum sensing at Airbus** — •Friedhelm Serwane, Thierry Botter
FM 51.3	Wed	14:40–15:00	Aula	**Quantum Computing in the Chemical Industry - First impressions and resource estimations for quantum chemistry on quantum computers** — •Michael Kuehn, Sebastian Zanker, Peter Deglmann, Michael Marthaler, Horst Weiss
FM 51.4	Wed	15:00–15:20	Aula	**A Semiconductor Corporation View on Quantum Technologies** — •Sebastian M. Luber, Thomas Kurth
FM 51.5	Wed	15:20–15:40	Aula	**Scalable instrumentation for quantum computing** — •Sadik Hafizovic
FM 51.6	Wed	15:40–16:00	Aula	**Approach and use cases: When and where may we start to search for quantum applications?** — •Tim Leonhardt
FM 52.1	Wed	14:00–14:30	1009	**Entanglement transport in the presence of noise** — •Clemens Gneiting
FM 53.1	Wed	14:00–14:30	1010	**Efficient single photon sources for quantum information science** — •Tobias Huber, Jan Donges, Simon Betzold, Magdalena Moczała-Dusanowska, Łukasz Dusanowski, Stefan Gerhardt, Jonathan Jurkat, Andreas Pfenning, Christian Schneider, Sven Höfling
FM 54.1	Wed	14:00–14:30	1015	**Quantum memories for photons** — •Mikael Afzelius
FM 55.1	Wed	14:00–14:30	1098	**Quantum Mean Embedding of Probability Distributions** — •Jonas M. Kübler, Krikamol Muandet, Bernhard Schölkopf
FM 56.1	Wed	14:00–14:30	2004	**New quantum many-body phases enabled by ergodicity breakdown** — •Dmitry Abanin
FM 57.1	Wed	14:00–14:30	2006	**Probing and manipulating Andreev Bound States** — •Cristian Urbina, Leandro Tosi, Cyril Metzger, Marcelo F. Goffman, Hugues Pothier, Sunghun Park, Alfredo Levy Yeyati, Jesper Nygård, Peter Krogstrup
FM 58.1	Wed	14:00–14:30	3042	**Thermodynamic uncertainty relations from exchange fluctuation theorems** — •John Goold
FM 60.1	Wed	14:00–14:30	3044	**Scalable Quantum Error Correction with the Bosonic GKP Code** — •Barbara Terhal
FM 70.1	Thu	11:00–11:30	Audi Max	**Hofstadter Topology** — •Bogdan A. Bernevig
FM 70.2	Thu	11:30–12:00	Audi Max	**Topological superconductors and Majorana fermions** — •Yoichi Ando
FM 70.3	Thu	12:00–12:30	Audi Max	**Majorana bound states in hybrid superconductor-semiconductor systems** — •Karsten Flensberg
FM 70.4	Thu	12:30–13:00	Audi Max	**Status of the search for Majorana zero modes in semiconductor nanowires** — •Sergey Frolov
FM 74.1	Thu	14:00–14:30	1009	**Quantum Computing and Cryptography** — •Nico Döttling
FM 76.1	Thu	14:00–14:30	1015	**Enhancing the precision of measurements with entanglement** — •Manuel Gessner
FM 77.1	Thu	14:00–14:30	1098	**Integrating Quantum Key Distribution into Telecom Networks** — •James Dynes
FM 78.1	Thu	14:00–14:30	1199	**Quantum Information Processing using Trapped Atomic Ions and MAGIC** — Theeraphot Sriarunothai, Sabine Wölk, Gouri S. Giri, Nicolai Friis, Vedran Dunjko, Hans J. Briegel, Patrick Barthel, Patrick Huber, •Christof Wunderlich
FM 80.1	Thu	14:00–14:30	2006	**Photon-Qubit and Qubit-Qubit Interactions in Semiconductor Circuit Quantum Electrodynamics (QED)** — •Andreas Wallraff
FM 81.1	Thu	14:00–14:30	3042	**Electrostatically defined quantum devices in bilayer graphene** — •Christoph Stampfer
FM 82.1	Thu	14:00–14:30	3044	**Deep Learning Advances in Particle Physics** — •Yannik Rath, Martin Erdmann, Benjamin Fischer, Erik Geiser, Jonas Glombitza, Dennis Noll, Thorben Quast, Marcel Rieger
FM 90.1	Fri	11:00–11:30	Audi Max	**How to use quantum light to machine learn graph-structured data** — •Maria Schuld, Kamil Bradler, Robert Israel, Daiqin Su, Brajesh Gupt

FM 90.2	Fri	11:30–12:00	Audi Max	**Ensuring safety for AI methods - from basic research to Bosch applications** — •David Reeb
FM 90.3	Fri	12:00–12:30	Audi Max	**Boltzmann machines and tensor networks for simulating quantum many body systems** — •Frank Verstrate
FM 90.4	Fri	12:30–13:00	Audi Max	**Response operators in Machine Learning: Response Properties in Chemical Space** — •Anders Christensen
FM 91.1	Fri	11:00–11:40	2004	**Information Theoretic Methods in Inflationary Cosmology** — •Achim Kempf
FM 91.2	Fri	11:40–12:20	2004	**Quantum Information and Cosmic Inflation** — •Jerome Martin
FM 91.3	Fri	12:20–13:00	2004	**Collective excitations as quantum sensors for fundamental physics** — •Ivette Fuentes

Outreach Events

FM 44	Tue	20:00–21:00	Audi Max	**Outreach: Einstein-Slam**
FM 67.1–67.1	Wed	19:30–21:00	Audi Max	**Outreach: Public panel discussion (fishbowl format)**
FM 87.1–87.1	Thu	19:30–21:00	Audi Max	**Outreach: Public science evening**

Sessions

FM 1.1–1.1	Mon	8:30– 9:30	Audi Max	**Plenary Talk: Quantum Machine Learning**
FM 2.1–2.1	Mon	9:30–10:30	Audi Max	**Introductory Talk: Quantum Algorithms**
FM 3.1–3.4	Mon	11:00–13:00	Aula	**Special Session: Teaching Quantum Science**
FM 4.1–4.1	Mon	11:00–12:00	2004	**Focus Talk: Quantum Simulation**
FM 5	Mon	13:00–14:00	Aula	**Lunch Talk: Experiments for Teaching QM**
FM 6	Mon	14:00–16:00	Aula	**Panel Discussion: Teaching Quantum Science**
FM 7.1–7.7	Mon	14:00–16:00	1009	**Secure Communication & Computation I**
FM 8.1–8.7	Mon	14:00–16:00	1010	**Enabling Technologies: Sources of Quantum States of Light I**
FM 9.1–9.7	Mon	14:00–15:45	1098	**Quantum Networks: Platforms and Components I**
FM 10.1–10.6	Mon	14:00–15:45	1199	**Topology: Artificial Systems**
FM 11.1–11.7	Mon	14:00–16:00	2004	**Entanglement: Many-Body States I**
FM 12.1–12.7	Mon	14:00–16:00	2006	**Quantum Sensing: Hardware Platforms**
FM 13.1–13.7	Mon	14:00–16:00	3042	**Open and Complex Quantum Systems I**
FM 14.1–14.7	Mon	14:00–16:00	3044	**Quantum Computation: Hardware Platforms I**
FM 15.1–15.3	Mon	16:00–16:30	1114	**Poster: Teaching Quantum Science**
FM 16.1–16.8	Mon	16:30–18:30	Aula	**Teaching Quantum Science**
FM 17.1–17.6	Mon	16:30–18:00	1010	**Quantum Computation: Simulation I**
FM 18.1–18.7	Mon	16:30–18:30	1015	**Quantum Networks: Interfaces & Hybrid Systems**
FM 19.1–19.7	Mon	16:30–18:30	1199	**Topology: Majoranas**
FM 20.1–20.8	Mon	16:30–18:30	2004	**Entanglement: Many-Body States II**
FM 21.1–21.7	Mon	16:30–18:30	2006	**Quantum Computation: Algorithms**
FM 22.1–22.6	Mon	16:30–18:15	3042	**Quantum Control**
FM 23.1–23.6	Mon	16:30–18:30	3043	**Quantum & Information Science: Neural Networks, Machine Learning, and Artificial Intelligence I**
FM 24.1–24.8	Mon	16:30–18:30	3044	**Quantum Sensing: Entanglement and Beyond Shot Noise**
FM 25.1–25.1	Tue	8:30– 9:30	Audi Max	**Plenary Talk: Ion Trap based Quantum Computing**
FM 26.1–26.1	Tue	9:30–10:30	Audi Max	**Introductory Talk: Machine Learning**
FM 27.1–27.4	Tue	11:00–13:00	Audi Max	**Special Session: Quantum Networks**
FM 28.1–28.1	Tue	11:00–12:00	2004	**Focus Talk: Quantum Spectroscopy**
FM 29	Tue	12:30–13:45	2006	**Lunch Talk: Funding for Quantum Projects**
FM 30.1–30.7	Tue	14:00–16:00	Aula	**Quantum Sensing: Applications I**
FM 31.1–31.6	Tue	14:00–15:45	1009	**Secure Communication & Computation II**
FM 32.1–32.7	Tue	14:00–16:00	1010	**Enabling Technologies: Sources of Quantum States of Light II**
FM 33.1–33.7	Tue	14:00–16:00	1015	**Quantum Networks: Concepts & Applications**
FM 34.1–34.4	Tue	14:00–15:15	1199	**Topology: Solid State Systems**
FM 35.1–35.8	Tue	14:00–16:00	2004	**Entanglement: Many-Body Dynamics I**
FM 36.1–36.8	Tue	14:00–16:15	2006	**Quantum Computation: Benchmarking and Certification**

FM 37.1–37.8	Tue	14:00–16:00	3042	**Open and Complex Quantum Systems II**
FM 38.1–38.8	Tue	14:00–16:00	3043	**Enabling Technologies: Quantum Dots, Quantum Wires, Point Contacts and Excitonic Systems**
FM 39.1–39.7	Tue	14:00–16:00	3044	**Quantum Computation: Hardware Platforms II**
FM 40.1–40.11	Tue	16:30–18:30	Tents	**Poster: Quantum Computation: Hardware Platforms**
FM 41.1–41.28	Tue	16:30–18:30	Tents	**Poster: Quantum Sensing**
FM 42.1–42.13	Tue	16:30–18:30	Tents	**Poster: Quantum Computation**
FM 43	Tue	18:30–20:00	Aula	**Networking event of the Working Group on Industry and Business (AIW) with free beer and pretzels, including the BMBF award ceremony of the "Quantum Futur Award 2019"**
FM 44	Tue	20:00–21:00	Audi Max	**Outreach: Einstein-Slam**
FM 45.1–45.1	Wed	8:30– 9:30	Audi Max	**Plenary Talk: Industry**
FM 46.1–46.1	Wed	9:30–10:30	Audi Max	**Introductory Talk: Quantum Sensing**
FM 47.1–47.6	Wed	11:00–13:00	Aula	**Industry I: Photonics**
FM 48.1–48.1	Wed	11:00–12:00	2004	**Focus Talk: Quantum Memories & Interfaces**
FM 49	Wed	12:30–13:45	2006	**Lunch Talk: Centers of Quantum Information Science**
FM 50.1–50.2	Wed	13:15–13:55	Audi Max	**Lunch Talk: Awards and Challenges**
FM 51.1–51.6	Wed	14:00–16:00	Aula	**Industry II: Computing**
FM 52.1–52.4	Wed	14:00–15:15	1009	**Entanglement: Transport**
FM 53.1–53.7	Wed	14:00–16:00	1010	**Enabling Technologies: Sources of Quantum States of Light III**
FM 54.1–54.7	Wed	14:00–16:00	1015	**Quantum Networks: Quantum Memory and Gates**
FM 55.1–55.5	Wed	14:00–15:30	1098	**Quantum & Information Science: Neural Networks, Machine Learning, and Artificial Intelligence II**
FM 56.1–56.7	Wed	14:00–16:00	2004	**Entanglement: Many-Body Dynamics II**
FM 57.1–57.7	Wed	14:00–16:00	2006	**Quantum Sensing: Spectroscopy I**
FM 58.1–58.7	Wed	14:00–16:00	3042	**Quantum Information Concepts in Thermodynamics**
FM 59.1–59.8	Wed	14:00–16:00	3043	**Enabling Technologies: Quantum Dots and Superconductivity-based Systems**
FM 60.1–60.7	Wed	14:00–16:00	3044	**Quantum Computation: Fault Tolerance & Error Correction**
FM 61.1–61.3	Wed	16:30–18:30	Aula	**Industry III: The Future of High Performance Computing (Presentations plus Panel Discussion)**
FM 62.1–62.6	Wed	16:30–18:30	Tents	**Poster: Open and Complex Quantum Systems**
FM 63.1–63.23	Wed	16:30–18:30	Tents	**Poster: Enabling Technologies: Quantum Materials, Quantum Dots, Quantum Wires, Point Contacts and Superconducting Systems**
FM 64.1–64.6	Wed	16:30–18:30	Tents	**Poster: Topology**
FM 65.1–65.6	Wed	16:30–18:30	Tents	**Poster: Quantum & Information Science**
FM 66.1–66.8	Wed	16:30–18:30	Tents	**Poster: Entanglement**
FM 67.1–67.1	Wed	19:30–21:00	Audi Max	**Outreach: Public panel discussion (fishbowl format)**
FM 68.1–68.1	Thu	8:30– 9:30	Audi Max	**Plenary Talk: Silicon Based Quantum Computing**
FM 69.1–69.1	Thu	9:30–10:30	Audi Max	**Introductory Talk: Hybrid Quantum Computation Platform**
FM 70.1–70.4	Thu	11:00–13:00	Audi Max	**Special Session: Topology**
FM 71.1–71.1	Thu	11:00–12:00	2004	**Focus Talk: Quantum Control**
FM 72	Thu	12:30–13:45	2006	**Lunch Talk: Start-ups**
FM 73.1–73.8	Thu	14:00–16:00	Aula	**Quantum Sensing: Applications & Spectroscopy**
FM 74.1–74.5	Thu	14:00–15:30	1009	**Secure Communication & Computation III**
FM 75.1–75.7	Thu	14:00–15:45	1010	**Quantum Computation: Simulation II**
FM 76.1–76.5	Thu	14:00–15:30	1015	**Entanglement: Spectroscopy**
FM 77.1–77.6	Thu	14:00–15:45	1098	**Quantum Networks: Platforms and Components II**
FM 78.1–78.5	Thu	14:00–15:30	1199	**Quantum Computation: Hardware Platform III**
FM 79.1–79.6	Thu	14:00–15:30	2004	**Entanglement: Neural Networks for Many-Body Dynamics**
FM 80.1–80.7	Thu	14:00–16:00	2006	**Enabling Technologies: Cavity QED**
FM 81.1–81.7	Thu	14:00–16:00	3042	**Enabling Technologies: Quantum Materials**
FM 82.1–82.6	Thu	14:00–15:45	3044	**Quantum & Information Science: Neural Networks, Machine Learning, and Artificial Intelligence III**
FM 83.1–83.14	Thu	16:30–18:30	Tents	**Poster: Enabling Technologies Sources of Quantum States of Light**
FM 84.1–84.19	Thu	16:30–18:30	Tents	**Poster: Quantum Networks**
FM 85.1–85.8	Thu	16:30–18:30	Tents	**Poster: Enabling Technologies: Cavity QED**
FM 86.1–86.9	Thu	16:30–18:30	Tents	**Poster: Secure Communication & Computation**

FM 87.1–87.1	Thu	19:30–21:00	Audi Max	**Outreach: Public science evening**
FM 88.1–88.1	Fri	8:30– 9:30	Audi Max	**Plenary Talk: Extreme Entanglement**
FM 89.1–89.1	Fri	9:30–10:30	Audi Max	**Introductory Talk: Quantum Light Sources**
FM 90.1–90.4	Fri	11:00–13:00	Audi Max	**Special Session: Quantum Physics for AI & AI for Quantum Physics**
FM 91.1–91.3	Fri	11:00–13:00	2004	**Special Session: Quantum Information Concepts in Astrophysics**