

Personal Information

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Date and November 17th, 1962
Place of birth: Bonn, Germany



Main Research Fields: Laser cooling and trapping of atoms and ions, high resolution spectroscopy, quantum information technologies with atoms, ions, electrons and solids, more than 230 publications with >24k citation in total and h=74

Scientific Career and International Experience

2022	Co-Founder and scientific advisor neQxt Quantum computing start-up
Since 2017	Member of the Australian Cluster of Excellence CQC2T
2012-2020	PI in the Cluster of Excellence PRISMA at Johannes Gutenberg-University, Mainz, Germany
Since 2010	Full Professor of Experimental Quantum Optics and Atomic Physics at Johannes Gutenberg-University Mainz & PI at Helmholtz Institute Mainz
2005-2010	Full Professor of Experimental Physics, Institute for Quantum Information Processing at the University of Ulm
2001	Habilitation and University Lecturer, University of Innsbruck, Austria
1995-1996	Research Assistant with R. Blatt, University of Innsbruck
1992-1995	Postdoctoral Research Assistant with S. Haroche, Lab. Kastler Brossel École Normale Supérieure, Paris
1992	Research Assistant, MPQ Garching
1989-1992	PhD student with T. Hänsch, MPQ Garching
1989	Diploma in Physics at the Technical University of Munich and MPI for Quantum Optics (MPQ) in Garching with G. Rempe, H. Walther
1986	Study of Physics, Technical University of Munich
1985-1986	Study of Physics, Friedrich-Wilhelm University of Bonn
1983-1984	Study of Physics, Ruhr-University of Bochum

Memberships and Academic Functions

2024	Local organizer of the Spring meeting 2026 of the DPG in Mainz
2022	Local organization of DFG GiRyd Forschergruppe meeting at Mainz
2022	co-Organization of ECTI conference Mainz day
2020 - 2025	Spokesperson for the Mainz node of the SFB-306
Since 2018	Member of Vorstandsrat der Deutschen Physikalischen Gesellschaft
2017	Organization of ITAMP workshop Quantum Thermodynamics, Harvard
2016/17	Local organization Spring Meeting of the German Phys. Society Mainz
2016	Panel member of QUTEGA
2014	Organization of ECTI conference Mainz
2013	Organization of QION 2013 Benasque
2009 - 2011	Organization of the Spring Meetings for the German Physical Society
1999/2000	Organization of international conferences ICOLS99, ICAP2000
2013 - 2016	Coordination of the European Integrated Project SIQS
2009 - 2013	Coordinator of the European Integrated Project AQUATE
2005 - 2010	Ulm Spokesperson of the TRR21
Since 2010	Member in quantum repeater network by German Federal Ministry of Education and Research (BMBF)
2010 - 2017	Panel member for ERC starting/consolidation
2011 - 2013	Vice-head of the quantum optics section of the German Physical Society
2009 - 2011	Head of the German Physical Society for the section quantum optics
2008 - 2009	Dean of students for the Physics Department, Univ. Ulm
2006-08/2009-10	Faculty Vice-Dean, Univ. Ulm

Editorial Work: PRL divisional editor (until 2021), J. Mod. Phys. editorial board member, EPJD Editorial board (until 2016) and Appl. Phys. B Special Issues

Scholarships, Awards and Honours: Rudolf Kaiser Award (2003), Innovation Award by the Tyroler Sparkasse (1997), Helmholtz Award for high precision measurements of fundamental constants by the Deutsche Physikalische Bundesanstalt Braunschweig (1993)

Grants and Funding

- German Science Foundation in several individual research projects within Forschergruppen and Schwerpunktprogramme, Subprojects within Sonderforschungsbereiche TR-49, TR-21, TR-306,
- German-French project, - German-Israel projects (GIF and DIP)
- PI in Mainz cluster of excellence PRISMA
- PI in Melbourne/Sidney cluster of excellence CQC2T
- The Bundesministerium für Wissenschaft und Forschung (German Federal Ministry for Education and Research) within Quantum Technologies: IQUAN, TRAPS, EVAQS, QRX, QLINKS, ATIQ, SYNQ ...
- The Volkswagen Foundation
- The European commission in several FET open and proactive initiatives
- The US intelligence advanced research projects activity
- ERC synergy grant 2025 – 2031

Supervision of Researchers in Early Career Phases

- Supervision of 53 master's Students, 23 PhD students, 15 postdocs at Univ. Ulm and Univ. Mainz (2005 – 2022), and co-advisor for 8 PhD and 9 Master's students at Univ. Innsbruck (2001 – 2005). Selecting a few to give examples for my support for a pathway either into science or into industry, highlighting the awards and prestigious grants:
- Janine Hilder, BAC, Master and PhD (2022), Herminghaus-Preis of Univ. Mainz (2023) and co-founder of spin-off company neQxt GmbH.
- Martín Drechsler from Buenos Aires, PhD (2021) in collaboration with me in Mainz
- Dr. Arezoo Mokhberi from ETHZ, since 2017 Postdoc me, Marie Curie fellow (2018), Co-PI in several projects, Emmy Noether selection pending (2022), now universal quantum
- Yanik Herrmann, BAC and Master with me, award for the best Master thesis of the faculty (2021), now pursuing a PhD in Delft
- Henning Kaufmann, PhD with me, Elke & Rainer Goebel award (2018), Schott Mainz;
- Georg Jacob, Diploma, PhD (2016) with me, award for the best PhD of the faculty (2016), now at Alpine Quantum Technologies, Innsbruck
- Max Hettrich, Diploma, PhD (2015) with me, Alpine Quantum Technologies, Innsbruck
- Thomas Feldker, PhD (2016) with me, Postdoc in Amsterdam, Univ. Innsbruck
- Johannes Rossnagel, PhD (2016) with me, Elke & Rainer-Göbel award (2017), Primes Darmstadt;
- Dr. Rene Gerritsma from Univ. Innsbruck, since Postdoc (2014) with me, ERC Starting grant, Co-PI in several projects, now Prof at Univ. van Amsterdam
- Uli Poschinger, PhD with me, assistant and Co-PI and PI in several projects
- Dr. Kilian Singer from Freiburg, assistant and Co-PI in several projects, professor in Kassel
- Dr. Christian Schmiegelow from Buenos Aires, Postdoc (2012) and Humboldt fellowship, now Prof. at Universidad Buenos Aires
- Andreas Walther, PhD (2014) with me, now Prof. at Univ. Lund
- Amado Bautista-Salvador, Master, PhD (2012) with me, now head of clean room at PTB and founder of Qudora GmbH
- Robert Fickler, Master (2010) with me, PhD in Wien, Postdoc in Ottawa, Prof. at Tampere

- Norbert Linke, Master (2009) with me, PhD in Oxford, Postdoc in Maryland, Prof at Duke

List of publications: full list with downloads <http://www.quantenbit.de/#/publications/>
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Five most cited publications:

Quantum Rabi oscillation: A direct test of field quantization in a cavity, M. Brune, F. Schmidt-Kaler, et al, Phys. Rev. Lett. 76, 1800 (1996) *cited 1506x*
 Deterministic quantum teleportation with atoms, M. Riebe, H. Häffner, C. Roos, W. Hänsel, J. Benhelm, GPT Lancaster, T. Körber, C. Becher, F. Schmidt-Kaler, D. James, R. Blatt, Nature 429, 734 (2004) *cited 1393x*
 Realization of the Cirac–Zoller controlled-NOT quantum gate, F. Schmidt-Kaler, et al., Nature 422 (6930), 408, 411 (2003) *cited 1346x*
 A single-atom heat engine, J. Roßnagel, S. Dawkins, K. Tolazzi, O. Abah, E. Lutz, F. Schmidt-Kaler, K. Singer, Science 352 (6283), 325 (2016) *cited 917x*
 Observation of sub-Poissonian photon statistics in a micromaser, G. Rempe, F. Schmidt-Kaler, H. Walther, Phys. Rev. Lett. 64, 2783 (1990) *cited 896x*
 Implementation of the Deutsch–Jozsa algorithm on an ion-trap quantum computer, S. Gulde, M. Riebe, G. Lancaster, C. Becher, J. Eschner, H. Häffner, F. Schmidt-Kaler, I. Chuang, R. Blatt, Nature 421, 48 (2003) *cited 777x*

Publications

245) E. Rosanowski, J. Eisinger, L. Funcke, U. Poschinger, F. Schmidt-Kaler, Sample-Based Krylov Quantum Diagonalization for the Schwinger Model on Trapped-Ion and Superconducting Quantum Processors, arxiv:2510.26951
 244) E. Fox, T. Mendes de Mendonça, F. Schmidt-Kaler, I. D'Amico, Fractional control gate Protocols for Quantum Engines, <https://arxiv.org/abs/2509.23997>
 243) V. Mikhailovskii, N. Sheth, G. Qu, M. Hejduk, N. Lausti, K. Satyajith, C. Smorra, G. Werth, N. Yadav, Q. Yu, C. Matthiesen, H. Häffner, F. Schmidt-Kaler, H. Bekker, D. Budker, Trapping of electrons and ions in a dual-frequency Paul trap, arXiv:2508.16407
 242) J. Hilder, S. Heußen, A. Ginter, A. Wilke, U. Poschinger, F. Schmidt-Kaler, W. Wormsbecher, Quantum Internet in a Nutshell -- Advancing Quantum Communication with Ion Traps, arXiv:2507.14383
 241) M. Stefanini, A. Ziolkowska, D. Budker, U. Poschinger, F. Schmidt-Kaler, A. Browaeys, A. Imamoglu, D. Chang, J. Marino, Is Lindblad for me? arXiv:2506.22436
 240) D. Schönberger, J. Hilder, F. Schmidt-Kaler, R. Wille, Shuttling for Trapped-Ion Quantum Computers with Embedded Processing Zones, IEEE int. conf. on quantum software - QSW 2025
 239) H. Bao, A. Schulze-Makuch, F. Schmidt-Kaler, Microwave-Dressing of Rydberg States in a Trapped Calcium Ion, arXiv:2504.21241, *EPL* **151** 55003 (2025)
 238) Ch. Melzer, S. Schuster, D. Olvera Millán, J. Hilder, U. Poschinger, K. Jansen, F. Schmidt-Kaler, Variational Quantum Simulation of the Interacting Schwinger Model on a Trapped-Ion Quantum Processor, arXiv:2504.20824
 237) Han Bao, Jonas Vogel, Ulrich Poschinger, Ferdinand Schmidt-Kaler, Quantum computing architecture with Rydberg gates in trapped ions, Phys. Rev. Reserach 7, 023025 (2025), arxiv:2411.19684
 236) P. Raschdorf, C. P. Leichtweiß, J. Vogel, B. Lekitsch, E. Yarar, J. Hilder, D. Kähler, H.-J. Quenzer, F. Röhr, G. Wille, C. von Hofen, F. Schmidt-Kaler, S. Gu-Stoppel, MEMS scanners for integrating an optical cavity in a segmented ion trap for enhanced qubit readout, SPIE Conf. Proceedings (2025)
 235) Monika Leibscher, Ferdinand Schmidt-Kaler, Christiane P. Koch, A planar rotor trapped and coupled to the vibrational modes of an ion crystal, arXiv 2504.00590
 234) Jonas Stricker, Jean Velten, Valerii Andriushkov, Lennard M. Arndt, Dmitry Budker, Konstantin Gaul, Dennis Renisch, Ferdinand Schmidt-Kaler, Azer Trimeche, Lars von der Wense, Christoph E. Düllmann, Laser fluence-dependent production of molecular thorium

- ions in different charge states for trapped-ion experiments, Phys. Rev. A 112, 012821, arxiv2503.05759
- 233) Author in book „Physik: Erkenntnisse und Perspektiven“ (2025) <https://physik-erkenntnisse-perspektiven.de/>
- 232) S. Schofield et al., Roadmap on Atomic-scale Semiconductor Devices, arXiv: 2501.04535, Nano Futures 9 012001 (2025)
- 231) Han Bao, Jonas Vogel, Ulrich Poschinger, Ferdinand Schmidt-Kaler, Quantum computing architecture with Rydberg gates in trapped ions, arxiv:2411.19684
- 230) Elliot Fox, Marcella Herrera, Ferdinand Schmidt-Kaler, Irene D'Amico, Harnessing Nth Root Gates for Energy Storage, Entropy 26(11), 952, (2024)
- 229) O. Onishchenko, G. Guarnieri, P. Rosillo-Rodes, D. Pijn, J. Hilder, U. G. Poschinger, M. Pernau-Llobet, J. Eisert & F. Schmidt-Kaler, Probing coherent quantum thermodynamics using a trapped ion, Nat. Comm. 15, 6974 (2024)
- 228) Abasalt Bahrami and Ferdinand Schmidt-Kaler, Realization of a chip-based hybrid trapping setup for ^{87}Rb atoms and Yb^+ ion crystals, Rev. Sci. Instrum. 95, 083201 (2024)
- 227) Fabian Kreppel, Christian Melzer, Janis Wagner, Janine Hilder, Ulrich Poschinger, Ferdinand Schmidt-Kaler and André Brinkman, Shuttling Compiler for a Shuttling-Based Trapped-Ion Quantum Computer Architecture with Junctions, IEEE International Conference on Quantum Computing and Engineering (QCE24)
- 226) Alexander Stahl, Michael Kewming, John Gould, Janine Hilder, Ulrich G. Poschinger, Ferdinand Schmidt-Kaler, Demonstration of energy extraction gain from non-classical correlations, arXiv:2404.14838
- 225) Maurizio Verde, Ansgar Schaefer, Benjamin Zenz, Zyad Shehata, Stefan Richter, Christian T. Schmiegelow, Joachim von Zanthier, Ferdinand Schmidt-Kaler, Spin-selective coherent light scattering from ion crystals, arxiv:2404.12513, Phys. Rev. A 112, 043719 (2025)
- 224) Oksana Chelpanova, Shane P. Kelly, Ferdinand Schmidt-Kaler, Giovanna Morigi, Jamir Marino, Dynamics of quantum discommensurations in the Frenkel-Kontorova chain, Phys. Rev. B 109, 214107 (2024)
- 223) F. Kreppel, Ch. Melzer, J. Wagner, J. Hilder, U. Poschinger, F. Schmidt-Kaler, A. Brinkmann, Quantum Circuit Compiler for a Shuttling-Based Trapped-Ion Quantum Computer, Quantum 7, 1176 (2023)
- 222) J. Durandau, J. Wagner, F. Mailhot, C. Brunet, F. Schmidt-Kaler, U. Poschinger, Y. Bérubé-Lauzière, Automated Generation of Shuttling Sequences for a Linear Segmented Ion Trap Quantum Computer, Quantum 7, 1175 (2023)
- 221) S. Kelly, U. Poschinger, F. Schmidt-Kaler, M. Fisher, J. Marino, Coherence requirements for quantum communication from hybrid circuit dynamics, SciPost Phys. 15, 250 (2023)
- 220) P. Adrich et al., GBAR Collaboration, Production of antihydrogen atoms by 6 keV antiprotons through a positronium cloud, Eur. Phys. J. C 83, 1004 (2023)
- 219) O. Chelpanova, S. Kelly, G. Morigi, F. Schmidt-Kaler, J. Marino, Injection and nucleation of topological defects in the quench dynamics of the Frenkel-Kontorova model, Euro. Phys. Lett. 143, 25002 (2023)
- 218) M. Verde, C. T. Schmiegelow, U. Poschinger, F. Schmidt-Kaler Trapped atoms in spatially-structured vector light fields, Sci Rep 13, 21283 (2023)
- 217) F. Schmidt-Kaler, J. von Zanthier, Collective Light emission of ion crystals in correlated Dicke states, in Photonic Quantum Technologies - Science and Applications, ISBN: 978-3-527-41412-3, Wiley-VCH, Berlin, Benyoucef, Mohamed (editor)
- 216) S. Richter, S. Wolf, J. von Zanthier, F. Schmidt-Kaler, Collective photon emission patterns from two atoms in free space, Phys. Rev. Research 5, 013163 (2023)
- 215) Marie Niederländer, Jonas Vogel, Alexander Schulze-Makuch, Bastien Gély, Arezoo Mokhberi, Ferdinand Schmidt-Kaler, Rydberg ions in coherent motional states: A new method for determining the polarizability of Rydberg ions, New Journal of Physics 25 033020 (2023)
- 214) F. Stopp, M. Verde, M. Katz, M. Drechsler, Ch. T. Schmiegelow, F. Schmidt-Kaler, Coherent transfer of the transverse momentum of an optical vortex beam to the motion of a single trapped ion, Phys. Rev. Lett. 129, 263603 (2022)
- 213) M. Gajewski, W. Le, S. Wolf, Ch. Düllmann, D. Budker, G. Morigi, F. Schmidt-Kaler

Fluorescence calorimetry of an ion crystal, *Phys. Rev. A* 106, 033108 (2022)

212) P. Blumer et al. (GBAR Collaboration), Positron accumulation in the GBAR experiment Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, Vol.1040, 167263 (2022).

213) W. Le, S. Wolf, L. Klein, C. Düllmann, D. Budker, F. Schmidt-Kaler, Robust Polarization Gradient Cooling of Trapped Ions, *New J. Phys.* 24, 043028 (2022).

212) D. Pijn, O. Onishchenko, J. Hilder, U. Poschinger, F. Schmidt-Kaler, R. Uzdin, Detecting heat leaks with trapped ion qubits, *Phys. Rev. Lett.* 128, 110601 (2022)

211) D. Budker, P. W. Graham, H. Ramani, F. Schmidt-Kaler, C. Smorra, S. Ulmer, Millicharged dark matter detection with ion traps (2021), *Phys. Rev. Quantum* 3, 010330 (2022).

210) J. Hilder, D. Pijn, O. Onishchenko, A. Stahl, M. Orth, B. Lekitsch, A. Rodriguez-Blanco, M. Müller, F. Schmidt-Kaler, U. Poschinger, Fault-tolerant parity readout on a shuttling-based trapped-ion quantum computer, *Phys. Rev. X* 12, 011032 (2022).

209) Felix Stopp, Henri Lehec, Ferdinand Schmidt-Kaler, A Deterministic Single Ion Fountain, *Quantum Sci. Technol.* 7 034002 (2022), see also related article This Simple Experiment Could Challenge Standard Quantum Theory in *Scientific American* Oct. (2021) by Anil Ananthaswamy

208) J. Andrijauskas, J. Vogel, A. Mokhberi, F. Schmidt-Kaler, Precision measurement of the ionization energy of a single trapped 40Ca^+ ion by Rydberg series excitation, *Phys. Rev. Lett.* 127, 203001 (2021)

207) F. Stopp, L. Ortiz-Gutiérrez, H. Lehec, F. Schmidt-Kaler, Single Ion Thermal Wave Packet Analyzed Via Time-Of-Flight Detection, *New Jour. Phys.* 23, 063002 (2021)

206) K. Groot-Berning, G. Jacob, C. Osterkamp, F. Jelezko, F. Schmidt-Kaler, Fabrication of 15NV^- centers in diamond using a deterministic single ion implanter, *New Jour. Phys.* 23 063067 (2021)

205) S. Richter, S. Wolf, J. von Zanthier, F. Schmidt-Kaler, Imaging trapped ion structures via fluorescence cross-correlation detection, *Phys. Rev. Lett.* 126, 173602 (2021)

204) M. Drechsler, S. Wolf, C. Schmiegelow, F. Schmidt-Kaler, Optical super-resolution sensing of a trapped ion's wave packet size, *Phys. Rev. Lett.* 127, 143602 (2021)

203) A. Husson et. al. (GBAR collaboration), A pulsed high-voltage decelerator system to deliver low-energy antiprotons, *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, Vol. 1002 165245 (2021)

202) M. Charlton et. al. (GBAR collaboration), Positron production using a 9 MeV electron linac for the GBAR experiment, *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, Vol. 985 164657 (2021), arXiv: 2006.05966

201) G. Quinteiro, Ch. Schmiegelow, F. Schmidt-Kaler, The paraxial approximation fails to describe the interaction of atoms with general vortex light fields (2020), arXiv:2004.00040

200) A. Mokhberi, M. Hennrich, F. Schmidt-Kaler, Trapped Rydberg ions: a new platform for quantum information processing, *Advances in Atomic, Molecular, and Optical Physics*, Academic Press, Ch. 4, 69 (2020), arXiv:2003.08891

199) M. Salz, Y. Herrmann, A. Nadarajah, A. Stahl, M. Hettrich, A. Stacey, S. Prawer, D. Hunger, F. Schmidt-Kaler, Cryogenic platform for coupling color centers in diamond membranes to a fiberbased microcavity, *Appl. Phys. B* 126, 131 (2020), arXiv:2002.08304

198) S. Wolf, S. Richter, J. von Zanthier, F. Schmidt-Kaler, Light of Two Atoms in Free Space: Bunching or Antibunching? *Phys. Rev. Lett.* 124, 063603 (2020)

197) V. Kaushal, B. Lekitsch, A. Stahl, J. Hilder, D. Pijn, C. Schmiegelow, A. Bermudez, M. Müller, F. Schmidt-Kaler, U. Poschinger, Shuttling-Based Trapped-Ion Quantum Information Processing, *AVS Quantum Sci.* 2, 014101 (2020), arXiv:1911.10983

196) R. Haas, T. Kieck, D. Budker, C. E. Düllmann, K. Groot-Berning, W. Li, D. Renisch, F. Schmidt-Kaler, F. Stopp, A. Viatkina, Development of a recoil ion source providing slow Th ions including $^{229}\text{(m)Th}$ in a broad charge state distribution, *Hyperfine Interactions* 241, 25 (2020), arXiv:1911.11674

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- 194) J. Vogel, W. Li, A. Mokhberi, I. Lesanowsky, F. Schmidt-Kaler, Shuttling of Rydberg ions for fast entangling operations, *Phys. Rev. Lett.* 123, 153603 (2019)
- 193) K. Groot-Berning, T. Kornher, G. Jacob, F. Stopp, S. Dawkins, R. Kolesov, J. Wrachtrup, K. Singer, F. Schmidt-Kaler, Deterministic single ion implantation of rare-earth ions for nanometer resolution colour center generation, *Phys. Rev. Lett.* 123, 106802 (2019). Selected and featured by the editors. See article by Belle Dume in *Physics World* 19 Sep. 2019.
- 192) F. Schmidt-Kaler, and U. G. Poschinger, 1 Chapter on Trapped Ions in *Quantum Information*, second edition, Wiley (2019), Edr. Leuchs & Brues.
- 191) C. Henkel, G. Jacob, F. Stopp, F. Schmidt-Kaler, Mark Keil, Yonathan Japha, Ron Folman, Stern Gerlach splitting for low-energy ion beams, *New Journal of Physics* 21, 083022 (2019)
- 190) "Determination of quantum defect for the Rydberg P series of Ca II" A. Mokhberi, J. Vogel, J. Andrijauskas, J. Walz, F. Schmidt-Kaler, *J. Phys. B* 52, 214001 (2019), special issue on Rydberg interactions
- 189) "Stern Gerlach splitting for low-energy ion beams", C. Henkel, G. Jacob, F. Stopp, F. Schmidt-Kaler, Mark Keil, Yonathan Japha, Ron Folman, *New Journal of Physics* 21, 083022 (2019)
- 188) "A spin heat engine coupled to a harmonic-oscillator flywheel", D. von Lindenfels, O. Gräb, C. T. Schmiegelow, V. Kaushal, J. Schulz, Mark T. Mitchison, John Goold, F. Schmidt-Kaler, and U. G. Poschinger, *Phys. Rev. Lett.* 123, 080602 (2019), selected and featured by the editors.
- 187) "Quantum simulating an experiment: Light interference from single ions and their mirror images", L. Bouten, G. Vissers, F. Schmidt-Kaler, *Phys. Rev. A* 100, 022323 (2019)
- 186) "Operation of a Microfabricated Planar Ion-Trap for Studies of a Yb⁺-Rb Hybrid Quantum System", A. Bahrami, M. Müller, M. Drechsler, J. Joger, R. Gerritsma, F. Schmidt-Kaler, *Physica Status Solidi B: Basic Solid State Physics* 1800647 (2019)
- 185) "Trapping and sympathetic cooling of single thorium ions for spectroscopy", K. Groot-Berning, F. Stopp, G. Jacob, D. Budker, R. Haas, D. Renisch, J. Runke, P. Thörle-Pospiech, C. Düllmann, F. Schmidt-Kaler, *Phys. Rev. A* 99, 023420 (2019)
- 184) "Excitation of E1-forbidden Atomic Transitions with Electric, Magnetic or Mixed Multipolarity in Light Fields Carrying Orbital and Spin Angular Momentum", Maria Solyanik-Gorgone, Andrei Afanasev, Carl E. Carlson, Christian T. Schmiegelow, Ferdinand Schmidt-Kaler, *J. Opt. Soc. Am. B* 36(3), 565 (2019)
- 183) "Spin and motion dynamics with zigzag ion crystals in transverse magnetic field gradients", J. Welzel, F. Stopp, F. Schmidt-Kaler, *J. Phys. B: At. Mol. Opt. Phys.* 52 025301 (2019)
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- 182) "Efficient and robust photo-ionization loading of beryllium ions", S. Wolf, D. Studer, K. Wendt, F. Schmidt-Kaler, *Appl. Phys. B* 124:30 (2018)
- 181) "Experimental Verification of Position-Dependent Angular-Momentum Selection Rules for Absorption of Twisted Light by a Bound Electron", A. Afanasev, C. Carlson, C. Schmiegelow, J. Schulz, F. Schmidt-Kaler, M. Solyanik, *New Jour. Phys.* 20, 023032 (2018)
- 180) "Twisted-light-ion interaction: the role of longitudinal fields", G. Quinteiro, F. Schmidt-Kaler, C. Schmiegelow, *Phys. Rev. Lett.* 119, 253203 (2017), editors selection
- 179) "Quantenphasen, aber dynamisch", P. Windpassinger, F. Schmidt-Kaler, *Phys. Jour.* page 22, Dec. (2017)
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- 177) "Scalable creation of long-lived multipartite entanglement", H. Kaufmann, T. Ruster, C. Schmiegelow, M. Luda, V. Kaushal, J. Schulz, D. von Lindenfels, F. Schmidt-Kaler, U. G. Poschinger, *Phys. Rev. Lett.* 119, 15050 (2017), editors selection

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- 175) "Fast ion swapping for quantum information processing", H. Kaufmann, T. Ruster, C. Schmiegelow, M. Luda, V. Kaushal, J. Schulz, D. von Lindenfels, F. Schmidt-Kaler, U. Poschinger, Phys. Rev. A 95, 052319 (2017)
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- 173) Georg Jacob, Karin Groot-Berning, Sebastian Wolf, Stefan Ulm, Luc Couturier, Samuel T. Dawkins, Ulrich G. Poschinger, Ferdinand Schmidt-Kaler, and Kilian Singer
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<https://www.chemie.de/news/159454/mikroskopieren-mit-einzelnen-ionen.html> (2016)
- 172) "Excitation of an Atomic Transition with a Vortex Laser Beam", C. T. Schmiegelow, J. Schulz, H. Kaufmann, T. Ruster, U. G. Poschinger, F. Schmidt-Kaler, Nature Comm. 7, 12998 (2016)
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