Ferdinand Schmidt-Kaler

List of Publications by Year
in descending order

130 papers	10,948 citations	41344 49 h-index	30087 103 g-index
132 all docs	132 docs citations	132 times ranked	5224 citing authors

#	Article	IF	Citations
1	Quantum Rabi Oscillation: A Direct Test of Field Quantization in a Cavity. Physical Review Letters, 1996, 76, 1800-1803.	7.8	862
2	Deterministic quantum teleportation with atoms. Nature, 2004, 429, 734-737.	27.8	853
3	Realization of the Ciracâ€“Zoller controlled-NOT quantum gate. Nature, 2003, 422, 408-411.	27.8	769
4	A single-atom heat engine. Science, 2016, 352, 325-329.	12.6	533
5	Observation of sub-Poissonian photon statistics in a micromaser. Physical Review Letters, 1990, 64, 2783-2786.	7.8	521
6	Nanoscale Heat Engine Beyond the Carnot Limit. Physical Review Letters, 2014, 112, 030602.	7.8	481
7	Implementation of the Deutschâ€“Jozsa algorithm on an ion-trap quantum computer. Nature, 2003, 421, 48-50.	27.8	402
8	Single-Ion Heat Engine at Maximum Power. Physical Review Letters, 2012, 109, 203006.	7.8	362
9	Quantum State Engineering on an Optical Transition and Decoherence in a Paul Trap. Physical Review Letters, 1999, 83, 4713-4716.	7.8	342
10	Control and Measurement of Three-Qubit Entangled States. Science, 2004, 304, 1478-1480.	12.6	312
11	Coupling a Single Atomic Quantum Bit to a High Finesse Optical Cavity. Physical Review Letters, 2002, 89, 103001.	7.8	266
12	From Lamb shift to light shifts: Vacuum and subphoton cavity fields measured by atomic phase sensitive detection. Physical Review Letters, 1994, 72, 3339-3342.	7.8	227
13	Observation of the Kibbleâ€“Zurek scaling law for defect formation in ion crystals. Nature Communications, 2013, 4, 2290.	12.8	221
14	Light interference from single atoms and their mirror images. Nature, 2001, 413, 495-498.	27.8	218
15	Experimental Demonstration of Ground State Laser Cooling with Electromagnetically Induced Transparency. Physical Review Letters, 2000, 85, 5547-5550.	7.8	199
16	Bell States of Atoms with Ultralong Lifetimes and Their Tomographic State Analysis. Physical Review Letters, 2004, 92, 220402.	7.8	194
17	Controlling Fast Transport of Cold Trapped Ions. Physical Review Letters, 2012, 109, 080501.	7.8	193
18	Laser cooling of trapped ions. Journal of the Optical Society of America B: Optical Physics, 2003, 20, 1003.	2.1	161

#	Article	IF	Citations
19	Laser addressing of individual ions in a linear ion trap. Physical Review A, 1999, 60, 145-148.	2.5	150
20	Spin Heat Engine Coupled to a Harmonic-Oscillator Flywheel. Physical Review Letters, 2019, 123, 080602.	7.8	141
21	How to realize a universal quantum gate with trapped ions. Applied Physics B: Lasers and Optics, 2003, 77, 789-796.	2.2	131
22	The coherence of qubits based on single CaÂions. Journal of Physics B: Atomic, Molecular and Optical Physics, 2003, 36, 623-636.	1.5	128
23	Employing Trapped Cold Ions to Verify the Quantum Jarzynski Equality. Physical Review Letters, 2008, 101, 070403.	7.8	128
24	Precision Measurement and Compensation of Optical Stark Shifts for an Ion-Trap Quantum Processor. Physical Review Letters, 2003, 90, 143602.	7.8	117
25	<i>Colloquium</i>: Trapped ions as quantum bits: Essential numerical tools. Reviews of Modern Physics, 2010, 82, 2609-2632.	45.6	105
26	Robust entanglement. Applied Physics B: Lasers and Optics, 2005, 81, 151-153.	2.2	103
27	Speed of ion-trap quantum-information processors. Physical Review A, 2000, 62, .	2.5	99
28	Simple and efficient photo-ionization loading of ions for precision ion-trapping experiments. Applied Physics B: Lasers and Optics, 2001, 73, 861-863.	2.2	99
29	Assessing the Progress of Trapped-Ion Processors Towards Fault-Tolerant Quantum Computation. Physical Review X, 2017, 7, .	8.9	93
30	Sympathetic ground-state cooling and coherent manipulation with two-ion crystals. Journal of Optics B: Quantum and Semiclassical Optics, 2001, 3, S34-S41.	1.4	81
31	Experimental and theoretical study of the3dD2â€“level lifetimes ofCa+40. Physical Review A, 2005, 71, .	2.5	81
32	Fabrication and heating rate study of microscopic surface electrode ion traps. New Journal of Physics, 2011, 13, 013032.	2.9	80
33	Sideband cooling and coherent dynamics in a microchip multi-segmented ion trap. New Journal of Physics, 2008, 10, 045007.	2.9	79
34	Ion strings for quantum gates. Applied Physics B: Lasers and Optics, 1998, 66, 603-608.	2.2	77
35	A long-lived Zeeman trapped-ion qubit. Applied Physics B: Lasers and Optics, 2016, 122, 1.	2.2	76
36	Investigating a qubit candidate: Spectroscopy on theS1/2toD5/2transition of a trapped calcium ion in a linear Paul trap. Physical Review A, 2000, 61, .	2.5	75

#	Article	IF	Citations
37	Vacuum-Field Level Shifts in a Single Trapped Ion Mediated by a Single Distant Mirror. Physical Review Letters, 2003, 91, 213602.	7.8	69
38	Optimization of segmented linear Paul traps and transport of stored particles. Fortschritte Der Physik, 2006, 54, 648-665.	4.4	66
39	Spontaneous Emission Lifetime of a Single TrappedCa+Ion in a High Finesse Cavity. Physical Review Letters, 2004, 92, 203002.	7.8	64
40	Towards the implanting of ions and positioning of nanoparticles with nm spatial resolution. Applied Physics A: Materials Science and Processing, 2008, 91, 567-571.	2.3	64
41	Transport of ions in a segmented linear Paul trap in printed-circuit-board technology. New Journal of Physics, 2008, 10, 013004.	2.9	62
42	Forces between a Single Atom and Its Distant Mirror Image. Physical Review Letters, 2004, 92, 223602.	7.8	61
43	Shuttling-based trapped-ion quantum information processing. AVS Quantum Science, 2020, 2, .	4.9	61
44	Deterministic Ultracold Ion Source Targeting the Heisenberg Limit. Physical Review Letters, 2009, 102, 070501.	7.8	60
45	Concept of deterministic single ion doping with sub-nm spatial resolution. Applied Physics A: Materials Science and Processing, 2006, 83, 321-327.	2.3	59
46	Light with orbital angular momentum interacting with trapped ions. European Physical Journal D, 2012, 66, 1.	1.3	57
47	Robust state preparation of a single trapped ion by adiabatic passage. Journal of Modern Optics, 2007, 54, 1541-1549.	1.3	55
48	Motional Sidebands and Direct Measurement of the Cooling Rate in the Resonance Fluorescence of a Single Trapped Ion. Physical Review Letters, 2000, 85, 538-541.	7.8	52
49	Precise Experimental Investigation of Eigenmodes in a Planar Ion Crystal. Physical Review Letters, 2012, 109, 263003.	7.8	49
50	Scalable Creation of Long-Lived Multipartite Entanglement. Physical Review Letters, 2017, 119, 150503.	7.8	46
51	Coherent excitation of normal modes in a string of Ca^+ ions. Optics Express, 1998, 3, 89.	3.4	45
52	Experimental realization of fast ion separation in segmented Paul traps. Physical Review A, 2014, 90, .	2.5	43
53	Transmission Microscopy with Nanometer Resolution Using a Deterministic Single Ion Source. Physical Review Letters, 2016, 117, 043001.	7.8	43
54	Controlling the transport of an ion: classical and quantum mechanical solutions. New Journal of Physics, 2014, 16, 075007.	2.9	42

#	Article	IF	Citations
55	Coherent manipulation of a⁴⁰Ca⁺spin qubit in a micro ion trap. Journal of Physics B: Atomic, Molecular and Optical Physics, 2009, 42, 154013.	1.5	41
56	Fast ion swapping for quantum-information processing. Physical Review A, 2017, 95, .	2.5	40
57	Rydberg excitation of trapped cold ions: a detailed case study. New Journal of Physics, 2011, 13, 075014.	2.9	37
58	Measurement of Dipole Matrix Elements with a Single Trapped Ion. Physical Review Letters, 2015, 115, 143003.	7.8	35
59	Entanglement-Based dc Magnetometry with Separated Ions. Physical Review X, 2017, 7, .	8.9	35
60	Observing the Phase Space Trajectory of an Entangled Matter Wave Packet. Physical Review Letters, 2010, 105, 263602.	7.8	33
61	Designing spin-spin interactions with one and two dimensional ion crystals in planar micro traps. European Physical Journal D, 2011, 65, 285-297.	1.3	33
62	Dynamics and control of fast ion crystal splitting in segmented Paul traps. New Journal of Physics, 2014, 16, 073012.	2.9	33
63	Fast shuttling of a trapped ion in the presence of noise. Physical Review A, 2014, 89, .	2.5	33
64	Rydberg Excitation of a Single Trapped Ion. Physical Review Letters, 2015, 115, 173001.	7.8	33
65	Quantum Simulation of the Cooperative Jahn-Teller Transition in 1D Ion Crystals. Physical Review Letters, 2012, 108, 235701.	7.8	31
66	Diode laser spectrometer at 493 nm for single trapped Ba + ions. Applied Physics B: Lasers and Optics, 1998, 67, 683-688.	2.2	28
67	Fast thermometry for trapped ions using dark resonances. New Journal of Physics, 2015, 17, 045004.	2.9	28
68	Light of Two Atoms in Free Space: Bunching or Antibunching?. Physical Review Letters, 2020, 124, 063603.	7.8	26
69	Trapping and sympathetic cooling of single thorium ions for spectroscopy. Physical Review A, 2019, 99, .	2.5	25
70	Ground state cooling, quantum state engineering and study of decoherence of ions in Paul traps. Journal of Modern Optics, 2000, 47, 2573-2582.	1.3	23
71	Quantum magnetism of spin-ladder compounds with trapped-ion crystals. New Journal of Physics, 2012, 14, 093042.	2.9	21
72	Fault-Tolerant Parity Readout on a Shuttling-Based Trapped-Ion Quantum Computer. Physical Review X, 2022, 12, .	8.9	21

#	Article	IF	Citations
73	Experimental and theoretical challenges for the trapped electron quantum computer. Journal of Physics B: Atomic, Molecular and Optical Physics, 2009, 42, 154010.	1.5	20
74	Experimental creation and analysis of displaced number states. Journal of Physics B: Atomic, Molecular and Optical Physics, 2013, 46, 104008.	1.5	20
75	Phase-Stable Free-Space Optical Lattices for Trapped Ions. Physical Review Letters, 2016, 116, 033002.	7.8	20
76	Millicharged Dark Matter Detection with Ion Traps. PRX Quantum, 2022, 3, .	9.2	20
77	Optical decay from a Fabryâ€“Perot cavity faster than the decay time. Journal of the Optical Society of America B: Optical Physics, 2002, 19, 1425.	2.1	18
78	Quantized AC-Stark shifts and their use for multiparticle entanglement and quantum gates. Europhysics Letters, 2004, 65, 587-593.	2.0	18
79	Ion Trap Quantum Computing with Ca+ Ions. Quantum Information Processing, 2004, 3, 61-73.	2.2	18
80	A trapped-ion local field probe. Applied Physics B: Lasers and Optics, 2010, 100, 725-730.	2.2	14
81	Focus on Atom Optics and its Applications. New Journal of Physics, 2010, 12, 065014.	2.9	14
82	A quantum repeater node with trapped ions: a realistic case example. Applied Physics B: Lasers and Optics, 2016, 122, 1.	2.2	14
83	Addressing single trapped ions for Rydberg quantum logic. Journal of Physics B: Atomic, Molecular and Optical Physics, 2016, 49, 154004.	1.5	14
84	Spin and motion dynamics with zigzag ion crystals in transverse magnetic gradients. Journal of Physics B: Atomic, Molecular and Optical Physics, 2019, 52, 025301.	1.5	14
85	Entangled states of trapped ions allow measuring the magnetic field gradient produced by a single atomic spin. Europhysics Letters, 2012, 99, 53001.	2.0	13
86	Optical Superresolution Sensing of a Trapped Ionâ€™s Wave Packet Size. Physical Review Letters, 2021, 127, 143602.	7.8	13
87	Doppler cooling a single Ca+ ion with a violet extended-cavity diode laser. Applied Physics B: Lasers and Optics, 2003, 76, 805-808.	2.2	12
88	Quantum information processing with trapped Ca + ions. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2003, 361, 1363-1374.	3.4	12
89	Focusing a deterministic single-ion beam. New Journal of Physics, 2010, 12, 065023.	2.9	12
90	Feedback-optimized operations with linear ion crystals. Journal of the Optical Society of America B: Optical Physics, 2010, 27, A99.	2.1	12

#	Article	IF	Citations
91	Shot-Noise-Limited Monitoring and Phase Locking of the Motion of a Single Trapped Ion. Physical Review Letters, 2013, 110, 133602.	7.8	12
92	Shuttling of Rydberg Ions for Fast Entangling Operations. Physical Review Letters, 2019, 123, 153603.	7.8	12
93	Visibility of Youngâ€™s Interference Fringes: Scattered Light from Small Ion Crystals. Physical Review Letters, 2016, 116, 183002.	7.8	11
94	Simulation of quantum magnetism in mixed-spin systems with impurity-doped ion crystals. New Journal of Physics, 2011, 13, 125008.	2.9	10
95	Simulation of the Jahnâ€“Tellerâ€“Dicke magnetic structural phase transition with trapped ions. Journal of Physics B: Atomic, Molecular and Optical Physics, 2013, 46, 104003.	1.5	10
96	Fabrication of ¹⁵NV^{âˆ’} centers in diamond using a deterministic single ion implanter. New Journal of Physics, 2021, 23, 063067.	2.9	10
97	Mode shaping in mixed ion crystals of 40Ca2+ and 40Ca+. Applied Physics B: Lasers and Optics, 2014, 114, 11-16.	2.2	9
98	Trapped Rydberg ions: A new platform for quantum information processing. Advances in Atomic, Molecular and Optical Physics, 2020, 69, 233-306.	2.3	9
99	Imaging Trapped Ion Structures via Fluorescence Cross-Correlation Detection. Physical Review Letters, 2021, 126, 173602.	7.8	9
100	Quantum gate in the decoherence-free subspace of trapped-ion qubits. Europhysics Letters, 2010, 92, 30006.	2.0	8
101	Efficient and robust photo-ionization loading of beryllium ions. Applied Physics B: Lasers and Optics, 2018, 124, 1.	2.2	8
102	Single ion as a shot-noise-limited magnetic-field-gradient probe. Physical Review A, 2011, 83, .	2.5	7
103	Determination of quantum defect for the Rydberg P series of Ca II. Journal of Physics B: Atomic, Molecular and Optical Physics, 2019, 52, 214001.	1.5	6
104	Optimised focusing ion optics for an ultracold deterministic single ion source targeting nm resolution. Journal of Modern Optics, 2009, 56, 2061-2075.	1.3	5
105	Phonon-to-spin mapping in a system of a trapped ion via optimal control. Physical Review A, 2015, 92, .	2.5	5
106	Robust polarization gradient cooling of trapped ions. New Journal of Physics, 2022, 24, 043028.	2.9	5
107	Single trapped ions interacting with low- and high-finesse optical cavities. Fortschritte Der Physik, 2003, 51, 359-368.	4.4	4
108	Course 5 Quantum information processing in ion traps I. Les Houches Summer School Proceedings, 2004, 79, 223-260.	0.2	3

#	Article	IF	Citations
109	Quantum algorithm for simulating an experiment: Light interference from single ions and their mirror images. Physical Review A, 2019, 100, .	2.5	3
110	Single ion thermal wave packet analyzed via time-of-flight detection. New Journal of Physics, 0, , .	2.9	3
111	Laser Spectroscopy. , 1999, , .		2
112	Total surveillance. Nature, 2007, 446, 275-276.	27.8	1
113	Maximizing the information gain of a single ion microscope using bayes experimental design. , 2016, , .		1
114	Rydberg Series Excitation of a Single Trapped Ca+40 Ion for Precision Measurements and Principal Quantum Number Scalings. Physical Review Letters, 2021, 127, 203001.	7.8	1
115	Optimization of Segmented Linear Paul Traps and Transport of Stored Particles. , 0, , 45-68.		1
116	A deterministic single ion fountain. Quantum Science and Technology, 0, , .	5.8	1
117	Detecting Heat Leaks with Trapped Ion Qubits. Physical Review Letters, 2022, 128, 110601.	7.8	1
118	Quantum Computing Experiments with Cold Trapped Ions. , 0, , 423-450.		0
119	Ion Trap Quantum Computing with Ca+ Ions. , 2005, , 61-73.		0
120	Topical issue Frontiers of ion trap and atomic physics: Wolfgang Paul 100. Applied Physics B: Lasers and Optics, 2014, 114, 1-1.	2.2	0
121	Feel the force. Nature, 2014, 510, 349-349.	27.8	0
122	Laser Cooling of Trapped Ions. , 2002, , 243-260.		0
123	SINGLE IONS INTERFERING WITH THEIR MIRROR IMAGES. , 2002, , .		0
124	A single photon source based on a single Ca+ ion. , 2004, , .		0
125	Spontaneous emission lifetime of a single Ca+ ion in a high finesse optical cavity. , 2004, , .		0
126	Single atom capturing effect by a single distant mirror. , 2004, , .		0

#	Article	IF	Citations
127	Quantum gates and entanglement. , 2004, , .		0
128	ION CRYSTALS FOR QUANTUM INFORMATION PROCESSING. , 2004, , .		0
129	Single Atom - Single Photon Interaction: from Bad-Cavity QED to Remote Entanglement. , 2007, , .		0
130	Nanoscopic single particle microscopy with a deterministic single ion source. , 2017, , .		0