Klaus Moelmer

List of Publications by Year
in descending order

132 papers	5,330 citations	126907 33 h-index	88630 70 g-index
133 all docs	133 docs citations	133 times ranked	3693 citing authors

#	Article	IF	Citations
1	Wave-function approach to dissipative processes in quantum optics. Physical Review Letters, 1992, 68, 580-583.	7.8	1,508
2	Blueprint for a microwave trapped ion quantum computer. Science Advances, 2017, 3, e1601540.	10.3	189
3	Bose-Einstein condensates in spatially periodic potentials. Physical Review A, 1998, 58, 1480-1484.	2.5	133
4	Past Quantum States of a Monitored System. Physical Review Letters, 2013, 111, 160401.	7.8	118
5	Adiabatic tracking of quantum many-body dynamics. Physical Review A, 2014, 90, .	2.5	114
6	Theory of Subradiant States of a One-Dimensional Two-Level Atom Chain. Physical Review Letters, 2019, 122, 203605.	7.8	112
7	Correlations in local measurements on a quantum state, and complementarity as an explanation of nonclassicality. Physical Review A, 2009, 80, .	2.5	111
8	Atom-atom interaction in strongly modified reservoirs. Physical Review A, 1997, 55, 1485-1496.	2.5	107
9	Multibit Gates for Quantum Computing. Physical Review Letters, 2001, 86, 3907-3910.	7.8	104
10	Dark Entangled Steady States of Interacting Rydberg Atoms. Physical Review Letters, 2013, 111, 033606.	7.8	103
11	Stringent and Efficient Assessment of Boson-Sampling Devices. Physical Review Letters, 2014, 113, 020502.	7.8	100
12	Entropic uncertainty relation for mutually unbiased bases. Physical Review A, 2009, 79, .	2.5	93
13	Fluorescence into Flat and Structured Radiation Continua: An Atomic Density Matrix without a Master Equation. Physical Review Letters, 1997, 79, 2654-2657.	7.8	92
14	Spin squeezing and precision probing with light and samples of atoms in the Gaussian description. Physical Review A, 2004, 70, .	2.5	92
15	Fisher Information and the Quantum CramÃ©r-Rao Sensitivity Limit of Continuous Measurements. Physical Review Letters, 2014, 112, 170401.	7.8	91
16	Exploring the quantum speed limit with computer games. Nature, 2016, 532, 210-213.	27.8	91
17	Quantum computing with an inhomogeneously broadened ensemble of ions: Suppression of errors from detuning variations by specially adapted pulses and coherent population trapping. Physical Review A, 2004, 69, .	2.5	86
18	High-fidelity Rydberg quantum gate via a two-atom dark state. Physical Review A, 2017, 96, .	2.5	84

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19	Spin squeezing of 1011 atoms by prediction and retrodiction measurements. Nature, 2020, 581, 159-163.	27.8	83
20	Monte Carlo Wave-Function Analysis of 3D Optical Molasses. Physical Review Letters, 1995, 74, 3772-3775.	7.8	82
21	Holographic Quantum Computing. Physical Review Letters, 2008, 101, 040501.	7.8	81
22	Bayesian parameter inference from continuously monitored quantum systems. Physical Review A, 2013, 87, .	2.5	73
23	Cavity quantum electrodynamics with a Rydberg-blocked atomic ensemble. Physical Review A, 2010, 82, .	2.5	68
24	Input-Output Theory with Quantum Pulses. Physical Review Letters, 2019, 123, 123604.	7.8	62
25	Aging of a quantum battery. Physical Review A, 2019, 100, .	2.5	55
26	Quantum computation architecture using optical tweezers. Physical Review A, 2011, 84, .	2.5	51
27	Binding Potentials and Interaction Gates between Microwave-Dressed Rydberg Atoms. Physical Review Letters, 2014, 113, 123003.	7.8	48
28	Fast Multiqubit Gates by Adiabatic Evolution in Interacting Excited-State Manifolds of Rydberg Atoms and Superconducting Circuits. Physical Review X, 2020, 10, .	8.9	47
29	Subradiant bound dimer excited states of emitter chains coupled to a one dimensional waveguide. Physical Review Research, 2020, 2, .	3.6	46
30	Proposal for detecting a single electron spin in a microwave resonator. Physical Review A, 2017, 95, .	2.5	44
31	Estimation of a classical parameter with Gaussian probes: Magnetometry with collective atomic spins. Physical Review A, 2004, 70, .	2.5	40
32	Squeezing and Entanglement of Density Oscillations in a Bose-Einstein Condensate. Physical Review Letters, 2015, 115, 060401.	7.8	39
33	Squeezed Light from Spin-Squeezed Atoms. Physical Review Letters, 2001, 87, 123601.	7.8	36
34	Lasing in the superradiant crossover regime. Physical Review A, 2018, 98, .	2.5	36
35	Estimation of atomic interaction parameters by photon counting. Physical Review A, 2014, 89, .	2.5	33
36	Diffuse atomic reflection at a rough mirror. Physical Review A, 1997, 55, 1160-1178.	2.5	32

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37	Spin squeezing in the Ising model. Physical Review A, 2001, 64, .	2.5	32
38	Error-free quantum communication through noisy channels. Physical Review A, 1998, 58, 2745-2749.	2.5	31
39	Hong-Ou-Mandel Interference between Two Deterministic Collective Excitations in an Atomic Ensemble. Physical Review Letters, 2016, 117, 180501.	7.8	31
40	Spin squeezing and SchrÃ¶dinger-cat-state generation in atomic samples with Rydberg blockade. Physical Review A, 2012, 86, .	2.5	30
41	Directional emission of single photons from small atomic samples. Physical Review A, 2013, 87, .	2.5	30
42	Polarization Squeezing by Optical Faraday Rotation. Physical Review Letters, 2006, 97, 143602.	7.8	27
43	Preparation of spin-squeezed atomic states by optical-phase-shift measurement. Physical Review A, 2002, 66, .	2.5	26
44	Single-atom single-photon coupling facilitated by atomic-ensemble dark-state mechanisms. Physical Review A, 2016, 94, .	2.5	26
45	Monte-Carlo simulations of superradiant lasing. New Journal of Physics, 2018, 20, 112001.	2.9	26
46	Quantum interactions with pulses of radiation. Physical Review A, 2020, 102, .	2.5	25
47	Subradiant Emission from Regular Atomic Arrays: Universal Scaling of Decay Rates from the Generalized Bloch Theorem. Physical Review Letters, 2020, 125, 253601.	7.8	25
48	Bosonic behavior of entangled fermions. Physical Review A, 2012, 86, .	2.5	24
49	Correlation functions and conditioned quantum dynamics in photodetection theory. Physica Scripta, 2015, 90, 128004.	2.5	24
50	Superradiance in a structured radiation reservoir. Physical Review A, 1998, 57, 3065-3073.	2.5	23
51	Deterministic Free-Space Source of Single Photons Using Rydberg Atoms. Physical Review Letters, 2018, 121, 123605.	7.8	23
52	Jaynes-Cummings Dynamics with a Matter Wave Oscillator. Physical Review Letters, 2003, 90, 110403.	7.8	22
53	Photon-photon interactions in Rydberg-atom arrays. Quantum - the Open Journal for Quantum Science, 0, 6, 674.	0.0	21
54	Reply to â€œComment on â€˜Optical coherence: A convenient fictionâ€™ â€• Physical Review A, 1998, 58, 4247-4247.	2.5	20

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55	Entanglement of two atomic samples by quantum-nondemolition measurements. Physical Review A, 2002, 66, .	2.5	19
56	Estimation of fluctuating magnetic fields by an atomic magnetometer. Physical Review A, 2006, 74, .	2.5	19
57	Quantum fluctuations in the image of a Bose gas. Physical Review A, 2008, 78, .	2.5	19
58	Dispersive coupling between light and a rare-earth-ionâ€“doped mechanical resonator. Physical Review A, 2016, 94, .	2.5	19
59	Dynamical programming of continuously observed quantum systems. Physical Review A, 2009, 79, .	2.5	18
60	Surface Plasmon Launching by Polariton Superradiance. ACS Photonics, 2019, 6, 871-877.	6.6	18
61	Retrodiction beyond the Heisenberg uncertainty relation. Nature Communications, 2020, 11, 5658.	12.8	16
62	Quantum beam splitter for atoms. Physical Review A, 2002, 65, .	2.5	15
63	Collective dynamics of inhomogeneously broadened emitters coupled to an optical cavity with narrow linewidth. Physical Review A, 2019, 100, .	2.5	15
64	Association of heteronuclear molecules in a harmonic oscillator well. Physical Review A, 2007, 76, .	2.5	14
65	How bosonic is a pair of fermions?. Applied Physics B: Lasers and Optics, 2014, 117, 785-796.	2.2	14
66	Hypothesis Testing with Open Quantum Systems. Physical Review Letters, 2015, 114, 040401.	7.8	14
67	Ultranarrow Superradiant Lasing by Dark Atom-Photon Dressed States. Physical Review Letters, 2021, 126, 123602.	7.8	14
68	Estimating a fluctuating magnetic field with a continuously monitored atomic ensemble. Physical Review A, 2020, 102, .	2.5	14
69	Deterministic Photon Sorting in Waveguide QED Systems. Physical Review Letters, 2022, 128, .	7.8	14
70	Macroscopic quantum-state reduction: Uniting Bose-Einstein condensates by interference measurements. Physical Review A, 2002, 65, .	2.5	12
71	Intensity and amplitude correlations in the fluorescence from atoms with interacting Rydberg states. Physical Review A, 2015, 92, .	2.5	12
72	Entangled Quantum Dynamics of Many-Body Systems using Bohmian Trajectories. Scientific Reports, 2018, 8, 12704.	3.3	12

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73	Self-Stimulated Pulse Echo Trains from Inhomogeneously Broadened Spin Ensembles. Physical Review Letters, 2020, 125, 137702.	7.8	12
74	Dynamics of the collective modes of an inhomogeneous spin ensemble in a cavity. Physical Review A, 2011, 83, .	2.5	11
75	Macroscopic entanglement in many-particle quantum states. Physical Review A, 2016, 93, .	2.5	11
76	Closing a quantum feedback loop inside a cryostat: Autonomous state preparation and long-time memory of a superconducting qubit. Physical Review A, 2016, 93, .	2.5	11
77	Counterdiabatic driving in spin squeezing and Dicke-state preparation. Physical Review A, 2016, 93, .	2.5	11
78	Correlated Electrons in Lithiumlike Hollow Atoms. Physical Review Letters, 2001, 87, 133002.	7.8	10
79	Quantum-limited position measurements of a dark matter-wave soliton. Physical Review A, 2008, 77, .	2.5	10
80	Two-boson composites. Physical Review A, 2013, 88, .	2.5	10
81	Quantized resonator field coupled to a current-biased Josephson junction in circuit QED. Physical Review A, 2014, 89, .	2.5	10
82	Spin memories in for the long haul. Nature, 2015, 517, 153-154.	27.8	10
83	Quantum teleportation with continuous measurements. Physical Review A, 2016, 94, .	2.5	10
84	Time-dependent atomic magnetometry with a recurrent neural network. Physical Review A, 2021, 103, .	2.5	10
85	Symmetric rotor of lithiumlike hollow atoms. Physical Review A, 2002, 65, .	2.5	9
86	Statistical signatures of states orthogonal to the Fock-state ladder of composite bosons. Physical Review A, 2016, 94, .	2.5	9
87	Revealing the strokes of autonomous quantum heat engines with work and heat fluctuations. Physical Review A, 2020, 101, .	2.5	8
88	A superradiant maser with nitrogen-vacancy center spins. Science China: Physics, Mechanics and Astronomy, 2022, 65, 1.	5.1	8
89	Cavity Quantum Electrodynamics Effects with Nitrogen Vacancy Center Spins Coupled to Room Temperature Microwave Resonators. Physical Review Letters, 2022, 128, .	7.8	8
90	Measurement of the topological Chern number by continuous probing of a qubit subject to a slowly varying Hamiltonian. Physical Review A, 2017, 96, .	2.5	7

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91	Multistate and multihypothesis discrimination with open quantum systems. Physical Review A, 2018, 97, .	2.5	7
92	Atomic diffraction assisted by a stimulated Raman transition. Physical Review A, 1997, 56, R9-R12.	2.5	6
93	Squeezing of collective excitations in spin ensembles. Physical Review A, 2012, 86, .	2.5	6
94	Hypothesis testing with a continuously monitored quantum system. Physical Review A, 2018, 98, .	2.5	6
95	Ion Trap Quantum Computer with Bichromatic Light. Fortschritte Der Physik, 2000, 48, 811-821.	4.4	5
96	Rotational structure in multiply excited atoms. Physical Review A, 2001, 64, .	2.5	5
97	Fidelities for transformations of unknown quantum states. Physical Review A, 2006, 73, .	2.5	5
98	Phase-matched matter wave collisions in periodic potentials. New Journal of Physics, 2006, 8, 170-170.	2.9	5
99	Cooling a micromechanical resonator to its ground state by measurement and feedback. Physical Review A, 2009, 80, .	2.5	5
100	Dicke phase transition in a disordered emitterâ€“graphene-plasmon system. Physical Review A, 2018, 98, .	2.5	5
101	Adiabatic preparation of squeezed states of oscillators and large spin systems coupled to a two-level system. Physical Review A, 2019, 99, .	2.5	5
102	Collective emission of photons from dense, dipole-dipole interacting atomic ensembles. Physical Review A, 2021, 103, .	2.5	5
103	Quantum estimation of a time-dependent perturbation. Physical Review A, 2021, 104, .	2.5	5
104	Atomic diffraction in counterpropagating Gaussian pulses of laser light. Physical Review A, 2007, 76, .	2.5	4
105	Complementarity of information sent via different bases. Physical Review A, 2009, 79, .	2.5	4
106	Theoretical study of plasmonic lasing in junctions with many molecules. Physical Review B, 2016, 94, .	3.2	4
107	Guessing the outcome of separate and joint quantum measurements of noncommuting observables. Physical Review A, 2021, 104, .	2.5	4
108	Interaction-induced phase fluctuations in a guided atom laser. Physical Review A, 2003, 67, .	2.5	3

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109	Random search for a dark resonance. Physical Review A, 2017, 95, .	2.5	3
110	Reversed interplay of quantum interference and which-way information in multiphoton entangled states. Physical Review A, 2017, 96, .	2.5	3
111	Sequentially generated entanglement, macroscopicity, and squeezing in a spin chain. Physical Review A, 2017, 96, .	2.5	3
112	Conditioned spin and charge dynamics of a single-electron quantum dot. Physical Review A, 2017, 96, .	2.5	3
113	Amplified emission and lasing in a plasmonic nanolaser with many three-level molecules. Physical Review A, 2018, 97, .	2.5	3
114	Critical slowing down of multiatom entanglement by Rydberg blockade. Physical Review A, 2018, 98, .	2.5	3
115	Active Frequency Measurement on Superradiant Strontium Clock Transitions. Physical Review Letters, 2022, 128, 013604.	7.8	3
116	Free-Fermion Multiply Excited Eigenstates and Their Experimental Signatures in 1D Arrays of Two-Level Atoms. Physical Review Letters, 2022, 128, 093602.	7.8	3
117	Approximate quantum data storage and teleportation. Physical Review A, 2002, 65, .	2.5	2
118	Analysis of a Multimode Plasmonic Nanolaser with an Inhomogeneous Distribution of Molecular Emitters. Journal of Physical Chemistry C, 2017, 121, 15339-15347.	3.1	2
119	Relaxation of an ensemble of two-level emitters in a squeezed bath. Physical Review A, 2017, 96, .	2.5	2
120	Position- and momentum-squeezed quantum states in micro-scale mechanical resonators. Modern Physics Letters B, 2020, 34, 2050193.	1.9	2
121	Ancilla-mediated qubit readout and heralded entanglement between rare-earth dopant ions in crystals. Physical Review A, 2021, 103, .	2.5	2
122	Manipulation of qubits in nonorthogonal collective storage modes. Physical Review A, 2012, 86, .	2.5	1
123	Integration of the Berry curvature on a qubit state manifold by coupling to a quantum meter system. Physical Review A, 2020, 102, .	2.5	1
124	Optical control of the complex phase of a quantum ground-state amplitude. Physical Review A, 2022, 105, .	2.5	1
125	Ion Trap Quantum Computer with Bichromatic Light. , 2005, , 41-51.		0
126	Entanglement between remote continuous-variable quantum systems: Effects of transmission loss. Physical Review A, 2006, 74, .	2.5	0

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127	Needle in a haystack. Nature Physics, 2014, 10, 707-708.	16.7	0
128	Editorial Expression of Concern: Exploring the quantum speed limit with computer games. Nature, 2020, 581, E7-E7.	27.8	0
129	More speed out of the quantum gate. Nature Physics, 2021, 17, 876-877.	16.7	0
130	GEOMETRIC CONSTRUCTION OF MULTI-BIT QUANTUM GATES. , 2003, , .		0
131	Monte Carlo Wavefunctions. , 1996, , 193-202.		0
132	The quantum vibes of atoms and ichthyosaurs. Musicology, 2018, , 51-59.	0.1	0