

Thomas Busch

List of Publications by Year in descending order

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142
papers

4,195
citations

136740

32
h-index

128067

60
g-index

145
all docs

145
docs citations

145
times ranked

2690
citing authors

#	ARTICLE	IF	CITATIONS
1	Two Cold Atoms in a Harmonic Trap. Foundations of Physics, 1998, 28, 549-559.	0.6	575
2	Dark-Bright Solitons in Inhomogeneous Bose-Einstein Condensates. Physical Review Letters, 2001, 87, 010401.	2.9	313
3	Motion of Dark Solitons in Trapped Bose-Einstein Condensates. Physical Review Letters, 2000, 84, 2298-2301.	2.9	307
4	Roadmap on STIRAP applications. Journal of Physics B: Atomic, Molecular and Optical Physics, 2019, 52, 202001.	0.6	108
5	Stability and collective excitations of a two-component Bose-Einstein condensed gas: A moment approach. Physical Review A, 1997, 56, 2978-2983.	1.0	106
6	Orthogonality catastrophe as a consequence of qubit embedding in an ultracold Fermi gas. Physical Review A, 2011, 84, .	1.0	99
7	Negative-Mass Hydrodynamics in a Spin-Orbit-coupled Bose-Einstein Condensate. Physical Review Letters, 2017, 118, 155301.	2.9	95
8	Properties of spin-orbit-coupled Bose-Einstein condensates. Frontiers of Physics, 2016, 11, 1.	2.4	89
9	Quench Dynamics and Orthogonality Catastrophe of Bose Polarons. Physical Review Letters, 2019, 122, 183001.	2.9	78
10	Mimicking the Probability Distribution of a Two-Dimensional Grover Walk with a Single-Qubit Coin. Physical Review Letters, 2011, 106, 080502.	2.9	73
11	Experimental Investigation of a Bistable System in the Presence of Noise and Delay. Physical Review Letters, 2004, 92, 050601.	2.9	71
12	Delay-Induced Excitability. Physical Review Letters, 2005, 95, 040601.	2.9	68
13	Measurement of collective excitations in a spin-orbit-coupled Bose-Einstein condensate. Physical Review A, 2014, 90, .	1.0	68
14	Spatial adiabatic passage: a review of recent progress. Reports on Progress in Physics, 2016, 79, 074401.	8.1	68
15	Gap solitons in spin-orbit-coupled Bose-Einstein condensates in optical lattices. Physical Review A, 2015, 91, .	1.0	64
16	Fast quasiadiabatic dynamics. Physical Review A, 2015, 92, .	1.0	63
17	Global quantum correlations in finite-size spin chains. New Journal of Physics, 2013, 15, 043033.	1.2	59
18	Orthogonality Catastrophe as a Consequence of the Quantum Speed Limit. Physical Review Letters, 2020, 124, 110601.	2.9	59

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19	Criticality, factorization, and long-range correlations in the anisotropic $X < Y >$ model. Physical Review A, 2013, 88, .	1.0	55
20	Thermometry of a Cold Fermi Gas via Dephasing Impurities. Physical Review Letters, 2020, 125, 080402.	2.9	54
21	Inhibition of spontaneous emission in Fermi gases. Europhysics Letters, 1998, 44, 1-6.	0.7	50
22	An efficient nonlinear Feshbach engine. New Journal of Physics, 2018, 20, 015005.	1.2	49
23	Quenching small quantum gases: Genesis of the orthogonality catastrophe. Physical Review A, 2014, 90, .	1.0	45
24	Alternate two-dimensional quantum walk with a single-qubit coin. Physical Review A, 2011, 84, .	1.0	44
25	Quantum correlations and spatial localization in one-dimensional ultracold bosonic mixtures. New Journal of Physics, 2014, 16, 103004.	1.2	41
26	Odd-petal-number states and persistent flows in spin-orbit-coupled Bose-Einstein condensates. Physical Review A, 2017, 95, .	1.0	39
27	Cavity magnomechanical storage and retrieval of quantum states. New Journal of Physics, 2021, 23, 043041.	1.2	39
28	Sharp crossover from composite fermionization to phase separation in microscopic mixtures of ultracold bosons. Physical Review A, 2013, 88, .	1.0	37
29	Low-density, one-dimensional quantum gases in a split trap. Journal of Physics B: Atomic, Molecular and Optical Physics, 2003, 36, 2553-2562.	0.6	36
30	Shaping the evanescent field of optical nanofibers for cold atom trapping. Optics Express, 2013, 21, 27093.	1.7	35
31	Observing the profile of an atom laser beam. Physical Review A, 2005, 72, .	1.0	34
32	Quantum gas mixtures in different correlation regimes. Physical Review A, 2013, 87, .	1.0	34
33	Many-body quantum dynamics and induced correlations of Bose polarons. New Journal of Physics, 2020, 22, 043007.	1.2	33
34	Boson pairs in a one-dimensional split trap. Physical Review A, 2007, 76, .	1.0	30
35	Ion-induced density bubble in a strongly correlated one-dimensional gas. Physical Review A, 2010, 81, .	1.0	30
36	Non-equilibrium thermodynamics of harmonically trapped bosons. New Journal of Physics, 2016, 18, 103035.	1.2	30

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37	Tunneling, self-trapping, and manipulation of higher modes of a Bose-Einstein condensate in a double well. <i>Physical Review A</i> , 2014, 89, .	1.0	29
38	Quantum percolation and transition point of a directed discrete-time quantum walk. <i>Scientific Reports</i> , 2015, 4, 6583.	1.6	28
39	Higher-order modes of vacuum-clad ultrathin optical fibers. <i>Physical Review A</i> , 2017, 96, .	1.0	27
40	Transverse mode of an atom laser. <i>Physical Review A</i> , 2002, 65, .	1.0	26
41	Ground-state properties of a Tonks-Girardeau gas in a split trap. <i>Physical Review A</i> , 2008, 77, .	1.0	26
42	Small numbers of vortices in anisotropic traps. <i>Physical Review A</i> , 2009, 79, .	1.0	26
43	Shaken not stirred: creating exotic angular momentum states by shaking an optical lattice. <i>Journal of Physics B: Atomic, Molecular and Optical Physics</i> , 2016, 49, 215003.	0.6	25
44	Wave-function monopoles in Bose-Einstein condensates. <i>Physical Review A</i> , 1999, 60, R2669-R2672.	1.0	24
45	Dynamical phase transitions and temporal orthogonality in one-dimensional hard-core bosons: from the continuum to the lattice. <i>New Journal of Physics</i> , 2017, 19, 113018.	1.2	24
46	Distribution of residence times in bistable noisy systems with time-delayed feedback. <i>Physical Review E</i> , 2004, 70, 031103.	0.8	23
47	A many-body heat engine at criticality. <i>Quantum Science and Technology</i> , 2021, 6, 015003.	2.6	23
48	New spin squeezing and other entanglement tests for two mode systems of identical bosons. <i>New Journal of Physics</i> , 2014, 16, 013026.	1.2	22
49	Enhancement of the quadrupole interaction of an atom with the guided light of an ultrathin optical fiber. <i>Physical Review A</i> , 2018, 97, .	1.0	22
50	Localized quantum walks as secured quantum memory. <i>Europhysics Letters</i> , 2015, 110, 10005.	0.7	21
51	Dynamics and energy spectra of aperiodic discrete-time quantum walks. <i>Physical Review E</i> , 2017, 96, 012111.	0.8	21
52	Effects of coherence on quantum speed limits and shortcuts to adiabaticity in many-particle systems. <i>Physical Review Research</i> , 2020, 2, .	1.3	21
53	Detection and engineering of spatial mode entanglement with ultracold bosons. <i>Physical Review A</i> , 2009, 80, .	1.0	20
54	Phase evolution in spatial dark states. <i>Physical Review A</i> , 2010, 81, .	1.0	20

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55	Effect of interparticle interaction in a free-oscillation atomic interferometer. <i>Physical Review A</i> , 2013, 87, .	1.0	20
56	Critical assessment of two-qubit post-Markovian master equations. <i>Physical Review A</i> , 2012, 85, .	1.0	18
57	Pump-probe spectroscopy of Bose polarons: Dynamical formation and coherence. <i>Physical Review Research</i> , 2020, 2, .	1.3	18
58	Vortex entanglement in Bose-Einstein condensates coupled to Laguerre-Gauss beams. <i>Physical Review A</i> , 2010, 81, .	1.0	17
59	Coherent adiabatic transport of atoms in radio-frequency traps. <i>Physical Review A</i> , 2011, 83, .	1.0	17
60	Optomechanics with a position-modulated Kerr-type nonlinear coupling. <i>Physical Review A</i> , 2017, 96, .	1.0	17
61	Channeling of spontaneous emission from an atom into the fundamental and higher-order modes of a vacuum-clad ultrathin optical fiber. <i>Physical Review A</i> , 2017, 96, .	1.0	16
62	An eccentrically perturbed Tonks-Girardeau gas. <i>New Journal of Physics</i> , 2010, 12, 093041.	1.2	15
63	Tripartite nonlocality and continuous-variable entanglement in thermal states of trapped ions. <i>Physical Review A</i> , 2011, 84, .	1.0	15
64	Moiré superlattice structures in kicked Bose-Einstein condensates. <i>Physical Review A</i> , 2016, 93, .	1.0	15
65	Spatial non-adiabatic passage using geometric phases. <i>EPJ Quantum Technology</i> , 2017, 4, .	2.9	15
66	Universal and optimal coin sequences for high entanglement generation in 1D discrete time quantum walks. <i>Journal of Physics A: Mathematical and Theoretical</i> , 2020, 53, 445306.	0.7	15
67	Understanding and Improving Critical Metrology. Quenching Superradiant Light-Matter Systems Beyond the Critical Point. <i>Quantum - the Open Journal for Quantum Science</i> , 0, 6, 700.	0.0	15
68	Entangling two defects via a surrounding crystal. <i>Physical Review A</i> , 2013, 87, .	1.0	14
69	Transport of ultracold atoms between concentric traps via spatial adiabatic passage. <i>New Journal of Physics</i> , 2016, 18, 015010.	1.2	14
70	Decoherence in two-dimensional quantum walks using four- and two-state particles. <i>Journal of Physics A: Mathematical and Theoretical</i> , 2013, 46, 105306.	0.7	13
71	Structural change of vortex patterns in anisotropic Bose-Einstein condensates. <i>Physical Review A</i> , 2011, 83, .	1.0	12
72	Coherent transport by adiabatic passage on atom chips. <i>Physical Review A</i> , 2013, 88, .	1.0	12

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73	Quantum reservoirs with ion chains. <i>Physical Review A</i> , 2014, 90, .	1.0	12
74	Fast control of interactions in an ultracold two atom system: Managing correlations and irreversibility. , 2019, 6, .		12
75	Quantum state transfer in the presence of nonhomogeneous external potentials. <i>Physical Review A</i> , 2013, 88, .	1.0	11
76	Single-atom interferometer based on two-dimensional spatial adiabatic passage. <i>Physical Review A</i> , 2014, 89, .	1.0	11
77	Extended Bose-Hubbard model for two-leg ladder systems in artificial magnetic fields. <i>Physical Review A</i> , 2017, 95, .	1.0	11
78	Symmetry breaking in binary Bose-Einstein condensates in the presence of an inhomogeneous artificial gauge field. <i>Physical Review A</i> , 2020, 102, .	1.0	11
79	Deep-learning-based quantum vortex detection in atomic Bose-Einstein condensates. <i>Machine Learning: Science and Technology</i> , 2021, 2, 035019.	2.4	11
80	Feshbach engine in the Thomas-Fermi regime. <i>Physical Review Research</i> , 2020, 2, .	1.3	11
81	Using adiabatic coupling techniques in atom-chip waveguide structures. <i>Physica Scripta</i> , 2010, T140, 014029.	1.2	10
82	Vortex dynamics in anisotropic traps. <i>Physical Review A</i> , 2010, 82, .	1.0	10
83	Transport, atom blockade, and output coupling in a Tonks-Girardeau gas. <i>Physical Review A</i> , 2011, 83, .	1.0	10
84	Quantum walk on distinguishable non-interacting many-particles and indistinguishable two-particle. <i>Quantum Information Processing</i> , 2012, 11, 1287-1299.	1.0	10
85	Tunneling-induced angular momentum for single cold atoms. <i>Physical Review A</i> , 2014, 89, .	1.0	10
86	Spatial adiabatic passage via interaction-induced band separation. <i>Physical Review A</i> , 2016, 93, .	1.0	10
87	Force of light on a two-level atom near an ultrathin optical fiber. <i>New Journal of Physics</i> , 2018, 20, 093031.	1.2	10
88	Low-density, one-dimensional quantum gases in the presence of a localized attractive potential. <i>Journal of Physics B: Atomic, Molecular and Optical Physics</i> , 2008, 41, 215301.	0.6	9
89	Emergence of classical rotation in superfluid Bose-Einstein condensates. <i>Physical Review A</i> , 2016, 93, .	1.0	9
90	Topological defect dynamics of vortex lattices in Bose-Einstein condensates. <i>Physical Review A</i> , 2016, 94, .	1.0	9

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91	Creating superfluid vortex rings in artificial magnetic fields. <i>Physical Review A</i> , 2017, 95, .	1.0	9
92	Spatial distributions of the fields in guided normal modes of two coupled parallel optical nanofibers. <i>New Journal of Physics</i> , 2021, 23, 043006.	1.2	9
93	Static and dynamic phases of a Tonks-Girardeau gas in an optical lattice. <i>New Journal of Physics</i> , 2018, 20, 113011.	1.2	8
94	Inverted harmonic oscillator dynamics of the nonequilibrium phase transition in the Dicke model. <i>Physical Review E</i> , 2021, 104, 034132.	0.8	8
95	Non-locality of two ultracold trapped atoms. <i>New Journal of Physics</i> , 2011, 13, 023016.	1.2	7
96	Noise-enhanced quantum transport on a closed loop using quantum walks. <i>Quantum Information Processing</i> , 2014, 13, 1313-1329.	1.0	7
97	Non-adiabatic generation of NOON states in a Tonks-Girardeau gas. <i>New Journal of Physics</i> , 2016, 18, 035012.	1.2	7
98	Fast and robust quantum control based on Pauli blocking. <i>Physical Review A</i> , 2017, 96, .	1.0	7
99	Two-leg-ladder Bose-Hubbard models with staggered fluxes. <i>Physical Review A</i> , 2018, 98, .	1.0	7
100	Chiral force of guided light on an atom. <i>Physical Review A</i> , 2018, 97, .	1.0	7
101	Coupling between guided modes of two parallel nanofibers. <i>New Journal of Physics</i> , 2020, 22, 123007.	1.2	7
102	Single photons in an imperfect array of beam-splitters: interplay between percolation, backscattering and transient localization. <i>Journal of Physics B: Atomic, Molecular and Optical Physics</i> , 2014, 47, 085502.	0.6	6
103	Robust boson dispenser: Quantum state preparation in interacting many-particle systems. <i>Physical Review A</i> , 2017, 96, .	1.0	6
104	Asymmetric Loop Spectra and Unbroken Phase Protection due to Nonlinearities in $\langle \text{PT} \rangle$ -Symmetric Periodic Potentials. <i>Physical Review Letters</i> , 2021, 127, 034101.	2.9	6
105	Torque of guided light on an atom near an optical nanofiber. <i>Optics Express</i> , 2019, 27, 15046.	1.7	6
106	Quantum state preparation using multi-level-atom optics. <i>Journal of Physics: Conference Series</i> , 2007, 84, 012002.	0.3	5
107	Spontaneous emission in ultracold spin-polarized anisotropic Fermi seas. <i>Physical Review A</i> , 2009, 79, .	1.0	5
108	Decoherence-assisted energy transfer and quantum criticalities. <i>Physical Review A</i> , 2012, 86, .	1.0	5

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109	Interaction-induced effects on Bose-Hubbard parameters. <i>Physical Review A</i> , 2017, 96, .	1.0	5
110	Topological states in the Kronigâ€Penney model with arbitrary scattering potentials. <i>New Journal of Physics</i> , 2019, 21, 013010.	1.2	5
111	Controlled creation of three-dimensional vortex structures in Bose-Einstein condensates using artificial magnetic fields. <i>Physical Review A</i> , 2020, 102, .	1.0	5
112	Simulating the Same Physics with Two Distinct Hamiltonians. <i>Physical Review Letters</i> , 2021, 126, 160402.	2.9	5
113	Optical trap for an atom around the midpoint between two coupled identical parallel optical nanofibers. <i>Physical Review A</i> , 2021, 103, .	1.0	5
114	Creating atom-number states around tapered optical fibers by loading from an optical lattice. <i>Physical Review A</i> , 2012, 85, .	1.0	4
115	Stability and dynamics of cross solitons in harmonically confined Bose-Einstein condensates. <i>Physical Review A</i> , 2013, 88, .	1.0	4
116	GENUINE CORRELATIONS IN FINITE-SIZE SPIN SYSTEMS. <i>International Journal of Modern Physics B</i> , 2013, 27, 1345034.	1.0	4
117	Coherent impurity transport in an attractive binary Boseâ€Einstein condensate. <i>New Journal of Physics</i> , 2019, 21, 053019.	1.2	4
118	Cavity-enhanced magnetometer with a spinor Boseâ€Einstein condensate. <i>New Journal of Physics</i> , 2021, 23, 043020.	1.2	4
119	Optomechanical cooling by STIRAP-assisted energy transfer: an alternative route towards the mechanical ground state. <i>New Journal of Physics</i> , 2020, 22, 103043.	1.2	4
120	Chaotic few-body vortex dynamics in rotating Bose-Einstein condensates. <i>Physical Review Fluids</i> , 2019, 4, .	1.0	4
121	Connecting Scrambling and Work Statistics for Short-Range Interactions in the Harmonic Oscillator. <i>Physical Review Letters</i> , 2022, 128, 070605.	2.9	4
122	Probing mechanical quantum coherence with an ultracold-atom meter. <i>Physical Review A</i> , 2011, 84, .	1.0	3
123	Measurement-Induced Generation of Spatial Entanglement in a Two-Dimensional Quantum Walk with Single-Qubit Coin. <i>Journal of Computational and Theoretical Nanoscience</i> , 2013, 10, 1613-1616.	0.4	3
124	Detecting atoms trapped in an optical lattice using a tapered optical nanofiber. <i>Optics Express</i> , 2014, 22, 32509.	1.7	3
125	Noise-free generation of bright matter-wave solitons. <i>Physical Review A</i> , 2018, 98, .	1.0	3
126	Driving Interactions Efficiently in a Composite Few-Body System. <i>Universe</i> , 2019, 5, 207.	0.9	3

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127	Self-Pinning Transition of a Tonks-Girardeau Gas in a Bose-Einstein Condensate. Physical Review Letters, 2022, 128, 053401.	2.9	3
128	Repulsive Casimir-Polder potentials of low-lying excited states of a multilevel alkali-metal atom near an optical nanofiber. Physical Review A, 2022, 105, .	1.0	3
129	Optimal conditions for spatial adiabatic passage of a Bose-Einstein condensate. Physical Review A, 2016, 94, .	1.0	2
130	Entanglement in Spatial Adiabatic Processes for Interacting Atoms. Few-Body Systems, 2018, 59, 1.	0.7	2
131	Waveguide-induced dispersion interaction between two two-level atoms with orthogonal in-transverse-plane dipoles. Applied Physics B: Lasers and Optics, 2019, 125, 1.	1.1	2
132	Spin-orbit coupling in the presence of strong atomic correlations. New Journal of Physics, 2020, 22, 013050.	1.2	2
133	Chirality of Light in Hybrid Modes of Vacuum-clad Ultrathin Optical Fibers. Communications in Physics, 2017, 27, 23.	0.0	2
134	Green's functions of and emission into discrete anisotropic and hyperbolic baths. Physical Review Research, 2022, 4, .	1.3	2
135	Optical force between two coupled identical parallel optical nanofibers. Physical Review A, 2022, 105, .	1.0	2
136	Detection of roton and phonon excitations in a spin-orbit-coupled Bose-Einstein condensate with a moving barrier. Physical Review A, 2022, 106, .	1.0	2
137	Chiral excitation of a single atom by a quantized single-photon pulse in a guided mode of a nanofiber. Physical Review A, 2020, 101, .	1.0	1
138	Graded-index optical fiber emulator of an interacting three-atom system: illumination control of particle statistics and classical non-separability. Quantum - the Open Journal for Quantum Science, 0, 3, 210.	0.0	1
139	Nonequilibrium many-body dynamics in supersymmetric quenching. Physical Review Research, 2022, 4, .	1.3	1
140	Vortex Lattices in Highly Anisotropic Traps. , 2007, , .		0
141	Detecting trapped atoms using an optical nanofiber. , 2014, , .		0
142	Bloch oscillations in supersolids. Journal of Physics B: Atomic, Molecular and Optical Physics, 0, , .	0.6	0