

# Thomas Busch

## List of Publications by Year in descending order

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142  
papers

4,195  
citations

136950

32  
h-index

128289

60  
g-index

145  
all docs

145  
docs citations

145  
times ranked

2690  
citing authors

#	ARTICLE	IF	CITATIONS
1	Self-Pinning Transition of a Tonks-Girardeau Gas in a Bose-Einstein Condensate. Physical Review Letters, 2022, 128, 053401.	7.8	3
2	Connecting Scrambling and Work Statistics for Short-Range Interactions in the Harmonic Oscillator. Physical Review Letters, 2022, 128, 070605.	7.8	4
3	Green's functions of and emission into discrete anisotropic and hyperbolic baths. Physical Review Research, 2022, 4, .	3.6	2
4	Repulsive Casimir-Polder potentials of low-lying excited states of a multilevel alkali-metal atom near an optical nanofiber. Physical Review A, 2022, 105, .	2.5	3
5	Optical force between two coupled identical parallel optical nanofibers. Physical Review A, 2022, 105, .	2.5	2
6	Nonequilibrium many-body dynamics in supersymmetric quenching. Physical Review Research, 2022, 4, .	3.6	1
7	Detection of roton and phonon excitations in a spin-orbit-coupled Bose-Einstein condensate with a moving barrier. Physical Review A, 2022, 106, .	2.5	2
8	Cavity-enhanced magnetometer with a spinor Bose-Einstein condensate. New Journal of Physics, 2021, 23, 043020.	2.9	4
9	Simulating the Same Physics with Two Distinct Hamiltonians. Physical Review Letters, 2021, 126, 160402.	7.8	5
10	Cavity magnomechanical storage and retrieval of quantum states. New Journal of Physics, 2021, 23, 043041.	2.9	39
11	Spatial distributions of the fields in guided normal modes of two coupled parallel optical nanofibers. New Journal of Physics, 2021, 23, 043006.	2.9	9
12	Deep-learning-based quantum vortex detection in atomic Bose-Einstein condensates. Machine Learning: Science and Technology, 2021, 2, 035019.	5.0	11
13	Optical trap for an atom around the midpoint between two coupled identical parallel optical nanofibers. Physical Review A, 2021, 103, .	2.5	5
14	Asymmetric Loop Spectra and Unbroken Phase Protection due to Nonlinearities in $\langle \text{mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"} \langle \text{mml:mi mathvariant="script"} \rangle \text{PT} \langle \text{mml:mi} \rangle \langle \text{mml:math} \rangle$ -Symmetric Periodic Potentials. Physical Review Letters, 2021, 127, 034101.	7.8	6
15	Inverted harmonic oscillator dynamics of the nonequilibrium phase transition in the Dicke model. Physical Review E, 2021, 104, 034132.	2.1	8
16	A many-body heat engine at criticality. Quantum Science and Technology, 2021, 6, 015003.	5.8	23
17	Symmetry breaking in binary Bose-Einstein condensates in the presence of an inhomogeneous artificial gauge field. Physical Review A, 2020, 102, .	2.5	11
18	Controlled creation of three-dimensional vortex structures in Bose-Einstein condensates using artificial magnetic fields. Physical Review A, 2020, 102, .	2.5	5

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19	<i>In Situ</i> Thermometry of a Cold Fermi Gas via Dephasing Impurities. <i>Physical Review Letters</i> , 2020, 125, 080402.	7.8	54
20	Chiral excitation of a single atom by a quantized single-photon pulse in a guided mode of a nanofiber. <i>Physical Review A</i> , 2020, 101, .	2.5	1
21	Orthogonality Catastrophe as a Consequence of the Quantum Speed Limit. <i>Physical Review Letters</i> , 2020, 124, 110601.	7.8	59
22	Spin-orbit coupling in the presence of strong atomic correlations. <i>New Journal of Physics</i> , 2020, 22, 013050.	2.9	2
23	Many-body quantum dynamics and induced correlations of Bose polarons. <i>New Journal of Physics</i> , 2020, 22, 043007.	2.9	33
24	Optomechanical cooling by STIRAP-assisted energy transfer: an alternative route towards the mechanical ground state. <i>New Journal of Physics</i> , 2020, 22, 103043.	2.9	4
25	Coupling between guided modes of two parallel nanofibers. <i>New Journal of Physics</i> , 2020, 22, 123007.	2.9	7
26	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.	2.1	15
27	Effects of coherence on quantum speed limits and shortcuts to adiabaticity in many-particle systems. <i>Physical Review Research</i> , 2020, 2, .	3.6	21
28	Pump-probe spectroscopy of Bose polarons: Dynamical formation and coherence. <i>Physical Review Research</i> , 2020, 2, .	3.6	18
29	Feshbach engine in the Thomas-Fermi regime. <i>Physical Review Research</i> , 2020, 2, .	3.6	11
30	Roadmap on STIRAP applications. <i>Journal of Physics B: Atomic, Molecular and Optical Physics</i> , 2019, 52, 202001.	1.5	108
31	Waveguide-induced dispersion interaction between two two-level atoms with orthogonal in-transverse-plane dipoles. <i>Applied Physics B: Lasers and Optics</i> , 2019, 125, 1.	2.2	2
32	Driving Interactions Efficiently in a Composite Few-Body System. <i>Universe</i> , 2019, 5, 207.	2.5	3
33	Topological states in the Kronig-Penney model with arbitrary scattering potentials. <i>New Journal of Physics</i> , 2019, 21, 013010.	2.9	5
34	Quench Dynamics and Orthogonality Catastrophe of Bose Polarons. <i>Physical Review Letters</i> , 2019, 122, 183001.	7.8	78
35	Coherent impurity transport in an attractive binary Bose-Einstein condensate. <i>New Journal of Physics</i> , 2019, 21, 053019.	2.9	4
36	Chaotic few-body vortex dynamics in rotating Bose-Einstein condensates. <i>Physical Review Fluids</i> , 2019, 4, .	2.5	4

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37	Fast control of interactions in an ultracold two atom system: Managing correlations and irreversibility. , 2019, 6, .		12
38	Torque of guided light on an atom near an optical nanofiber. Optics Express, 2019, 27, 15046.	3.4	6
39	An efficient nonlinear Feshbach engine. New Journal of Physics, 2018, 20, 015005.	2.9	49
40	Enhancement of the quadrupole interaction of an atom with the guided light of an ultrathin optical fiber. Physical Review A, 2018, 97, .	2.5	22
41	Entanglement in Spatial Adiabatic Processes for Interacting Atoms. Few-Body Systems, 2018, 59, 1.	1.5	2
42	Noise-free generation of bright matter-wave solitons. Physical Review A, 2018, 98, .	2.5	3
43	Two-leg-ladder Bose-Hubbard models with staggered fluxes. Physical Review A, 2018, 98, .	2.5	7
44	Static and dynamic phases of a Tonksâ€“Girardeau gas in an optical lattice. New Journal of Physics, 2018, 20, 113011.	2.9	8
45	Force of light on a two-level atom near an ultrathin optical fiber. New Journal of Physics, 2018, 20, 093031.	2.9	10
46	Chiral force of guided light on an atom. Physical Review A, 2018, 97, .	2.5	7
47	Spatial non-adiabatic passage using geometric phases. EPJ Quantum Technology, 2017, 4, .	6.3	15
48	Creating superfluid vortex rings in artificial magnetic fields. Physical Review A, 2017, 95, .	2.5	9
49	Channeling of spontaneous emission from an atom into the fundamental and higher-order modes of a vacuum-clad ultrathin optical fiber. Physical Review A, 2017, 96, .	2.5	16
50	Optomechanics with a position-modulated Kerr-type nonlinear coupling. Physical Review A, 2017, 96, .	2.5	17
51	Fast and robust quantum control based on Pauli blocking. Physical Review A, 2017, 96, .	2.5	7
52	Dynamics and energy spectra of aperiodic discrete-time quantum walks. Physical Review E, 2017, 96, 012111.	2.1	21
53	Dynamical phase transitions and temporal orthogonality in one-dimensional hard-core bosons: from the continuum to the lattice. New Journal of Physics, 2017, 19, 113018.	2.9	24
54	Robust boson dispenser: Quantum state preparation in interacting many-particle systems. Physical Review A, 2017, 96, .	2.5	6

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55	Higher-order modes of vacuum-clad ultrathin optical fibers. <i>Physical Review A</i> , 2017, 96, .	2.5	27
56	Interaction-induced effects on Bose-Hubbard parameters. <i>Physical Review A</i> , 2017, 96, .	2.5	5
57	Negative-Mass Hydrodynamics in a Spin-Orbit-coupled Bose-Einstein Condensate. <i>Physical Review Letters</i> , 2017, 118, 155301.	7.8	95
58	Odd-petal-number states and persistent flows in spin-orbit-coupled Bose-Einstein condensates. <i>Physical Review A</i> , 2017, 95, .	2.5	39
59	Extended Bose-Hubbard model for two-leg ladder systems in artificial magnetic fields. <i>Physical Review A</i> , 2017, 95, .	2.5	11
60	Chirality of Light in Hybrid Modes of Vacuum-clad Ultrathin Optical Fibers. <i>Communications in Physics</i> , 2017, 27, 23.	0.0	2
61	Non-equilibrium thermodynamics of harmonically trapped bosons. <i>New Journal of Physics</i> , 2016, 18, 103035.	2.9	30
62	Non-adiabatic generation of NOON states in a Tonks-Girardeau gas. <i>New Journal of Physics</i> , 2016, 18, 035012.	2.9	7
63	Moiré superlattice structures in kicked Bose-Einstein condensates. <i>Physical Review A</i> , 2016, 93, .	2.5	15
64	Emergence of classical rotation in superfluid Bose-Einstein condensates. <i>Physical Review A</i> , 2016, 93, .	2.5	9
65	Spatial adiabatic passage via interaction-induced band separation. <i>Physical Review A</i> , 2016, 93, .	2.5	10
66	Topological defect dynamics of vortex lattices in Bose-Einstein condensates. <i>Physical Review A</i> , 2016, 94, .	2.5	9
67	Optimal conditions for spatial adiabatic passage of a Bose-Einstein condensate. <i>Physical Review A</i> , 2016, 94, .	2.5	2
68	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.	1.5	25
69	Spatial adiabatic passage: a review of recent progress. <i>Reports on Progress in Physics</i> , 2016, 79, 074401.	20.1	68
70	Properties of spin-orbit-coupled Bose-Einstein condensates. <i>Frontiers of Physics</i> , 2016, 11, 1.	5.0	89
71	Transport of ultracold atoms between concentric traps via spatial adiabatic passage. <i>New Journal of Physics</i> , 2016, 18, 015010.	2.9	14
72	Fast quadiabatic dynamics. <i>Physical Review A</i> , 2015, 92, .	2.5	63

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73	Quantum percolation and transition point of a directed discrete-time quantum walk. Scientific Reports, 2015, 4, 6583.	3.3	28
74	Gap solitons in spin-orbit-coupled Bose-Einstein condensates in optical lattices. Physical Review A, 2015, 91, .	2.5	64
75	Localized quantum walks as secured quantum memory. Europhysics Letters, 2015, 110, 10005.	2.0	21
76	Measurement of collective excitations in a spin-orbit-coupled Bose-Einstein condensate. Physical Review A, 2014, 90, .	2.5	68
77	Quantum correlations and spatial localization in one-dimensional ultracold bosonic mixtures. New Journal of Physics, 2014, 16, 103004.	2.9	41
78	New spin squeezing and other entanglement tests for two mode systems of identical bosons. New Journal of Physics, 2014, 16, 013026.	2.9	22
79	Detecting atoms trapped in an optical lattice using a tapered optical nanofiber. Optics Express, 2014, 22, 32509.	3.4	3
80	Single-atom interferometer based on two-dimensional spatial adiabatic passage. Physical Review A, 2014, 89, .	2.5	11
81	Tunneling-induced angular momentum for single cold atoms. Physical Review A, 2014, 89, .	2.5	10
82	Single photons in an imperfect array of beam-splitters: interplay between percolation, backscattering and transient localization. Journal of Physics B: Atomic, Molecular and Optical Physics, 2014, 47, 085502.	1.5	6
83	Quantum reservoirs with ion chains. Physical Review A, 2014, 90, .	2.5	12
84	Tunneling, self-trapping, and manipulation of higher modes of a Bose-Einstein condensate in a double well. Physical Review A, 2014, 89, .	2.5	29
85	Quenching small quantum gases: Genesis of the orthogonality catastrophe. Physical Review A, 2014, 90, .	2.5	45
86	Noise-enhanced quantum transport on a closed loop using quantum walks. Quantum Information Processing, 2014, 13, 1313-1329.	2.2	7
87	Detecting trapped atoms using an optical nanofiber. , 2014, , .		0
88	Stability and dynamics of cross solitons in harmonically confined Bose-Einstein condensates. Physical Review A, 2013, 88, .	2.5	4
89	Quantum state transfer in the presence of nonhomogeneous external potentials. Physical Review A, 2013, 88, .	2.5	11
90	Global quantum correlations in finite-size spin chains. New Journal of Physics, 2013, 15, 043033.	2.9	59

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91	Decoherence in two-dimensional quantum walks using four- and two-state particles. Journal of Physics A: Mathematical and Theoretical, 2013, 46, 105306.	2.1	13
92	Shaping the evanescent field of optical nanofibers for cold atom trapping. Optics Express, 2013, 21, 27093.	3.4	35
93	GENUINE CORRELATIONS IN FINITE-SIZE SPIN SYSTEMS. International Journal of Modern Physics B, 2013, 27, 1345034.	2.0	4
94	Effect of interparticle interaction in a free-oscillation atomic interferometer. Physical Review A, 2013, 87, .	2.5	20
95	Entangling two defects via a surrounding crystal. Physical Review A, 2013, 87, .	2.5	14
96	Criticality, factorization, and long-range correlations in the anisotropic $X$ $Y$ model. Physical Review A, 2013, 88, .	2.5	55
97	Coherent transport by adiabatic passage on atom chips. Physical Review A, 2013, 88, .	2.5	12
98	Quantum gas mixtures in different correlation regimes. Physical Review A, 2013, 87, .	2.5	34
99	Sharp crossover from composite fermionization to phase separation in microscopic mixtures of ultracold bosons. Physical Review A, 2013, 88, .	2.5	37
100	Measurement-Induced Generation of Spatial Entanglement in a Two-Dimensional Quantum Walk with Single-Qubit Coin. Journal of Computational and Theoretical Nanoscience, 2013, 10, 1613-1616.	0.4	3
101	Decoherence-assisted energy transfer and quantum criticalities. Physical Review A, 2012, 86, .	2.5	5
102	Critical assessment of two-qubit post-Markovian master equations. Physical Review A, 2012, 85, .	2.5	18
103	Quantum walk on distinguishable non-interacting many-particles and indistinguishable two-particle. Quantum Information Processing, 2012, 11, 1287-1299.	2.2	10
104	Creating atom-number states around tapered optical fibers by loading from an optical lattice. Physical Review A, 2012, 85, .	2.5	4
105	Alternate two-dimensional quantum walk with a single-qubit coin. Physical Review A, 2011, 84, .	2.5	44
106	Tripartite nonlocality and continuous-variable entanglement in thermal states of trapped ions. Physical Review A, 2011, 84, .	2.5	15
107	Orthogonality catastrophe as a consequence of qubit embedding in an ultracold Fermi gas. Physical Review A, 2011, 84, .	2.5	99
108	Probing mechanical quantum coherence with an ultracold-atom meter. Physical Review A, 2011, 84, .	2.5	3

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109	Structural change of vortex patterns in anisotropic Bose-Einstein condensates. <i>Physical Review A</i> , 2011, 83, .	2.5	12
110	Non-locality of two ultracold trapped atoms. <i>New Journal of Physics</i> , 2011, 13, 023016.	2.9	7
111	Mimicking the Probability Distribution of a Two-Dimensional Grover Walk with a Single-Qubit Coin. <i>Physical Review Letters</i> , 2011, 106, 080502.	7.8	73
112	Transport, atom blockade, and output coupling in a Tonks-Girardeau gas. <i>Physical Review A</i> , 2011, 83, .	2.5	10
113	Coherent adiabatic transport of atoms in radio-frequency traps. <i>Physical Review A</i> , 2011, 83, .	2.5	17
114	Using adiabatic coupling techniques in atom-chip waveguide structures. <i>Physica Scripta</i> , 2010, T140, 014029.	2.5	10
115	Vortex dynamics in anisotropic traps. <i>Physical Review A</i> , 2010, 82, .	2.5	10
116	Phase evolution in spatial dark states. <i>Physical Review A</i> , 2010, 81, .	2.5	20
117	Ion-induced density bubble in a strongly correlated one-dimensional gas. <i>Physical Review A</i> , 2010, 81, .	2.5	30
118	An eccentrically perturbed Tonks-Girardeau gas. <i>New Journal of Physics</i> , 2010, 12, 093041.	2.9	15
119	Vortex entanglement in Bose-Einstein condensates coupled to Laguerre-Gauss beams. <i>Physical Review A</i> , 2010, 81, .	2.5	17
120	Small numbers of vortices in anisotropic traps. <i>Physical Review A</i> , 2009, 79, .	2.5	26
121	Spontaneous emission in ultracold spin-polarized anisotropic Fermi seas. <i>Physical Review A</i> , 2009, 79, .	2.5	5
122	Detection and engineering of spatial mode entanglement with ultracold bosons. <i>Physical Review A</i> , 2009, 80, .	2.5	20
123	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.	1.5	9
124	Ground-state properties of a Tonks-Girardeau gas in a split trap. <i>Physical Review A</i> , 2008, 77, .	2.5	26
125	Vortex Lattices in Highly Anisotropic Traps. , 2007, , .		0
126	Quantum state preparation using multi-level-atom optics. <i>Journal of Physics: Conference Series</i> , 2007, 84, 012002.	0.4	5



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127	Boson pairs in a one-dimensional split trap. <i>Physical Review A</i> , 2007, 76, .	2.5	30
128	Delay-Induced Excitability. <i>Physical Review Letters</i> , 2005, 95, 040601.	7.8	68
129	Observing the profile of an atom laser beam. <i>Physical Review A</i> , 2005, 72, .	2.5	34
130	Distribution of residence times in bistable noisy systems with time-delayed feedback. <i>Physical Review E</i> , 2004, 70, 031103.	2.1	23
131	Experimental Investigation of a Bistable System in the Presence of Noise and Delay. <i>Physical Review Letters</i> , 2004, 92, 050601.	7.8	71
132	Low-density, one-dimensional quantum gases in a split trap. <i>Journal of Physics B: Atomic, Molecular and Optical Physics</i> , 2003, 36, 2553-2562.	1.5	36
133	Transverse mode of an atom laser. <i>Physical Review A</i> , 2002, 65, .	2.5	26
134	Dark-Bright Solitons in Inhomogeneous Bose-Einstein Condensates. <i>Physical Review Letters</i> , 2001, 87, 010401.	7.8	313
135	Motion of Dark Solitons in Trapped Bose-Einstein Condensates. <i>Physical Review Letters</i> , 2000, 84, 2298-2301.	7.8	307
136	Wave-function monopoles in Bose-Einstein condensates. <i>Physical Review A</i> , 1999, 60, R2669-R2672.	2.5	24
137	Two Cold Atoms in a Harmonic Trap. <i>Foundations of Physics</i> , 1998, 28, 549-559.	1.3	575
138	Inhibition of spontaneous emission in Fermi gases. <i>Europhysics Letters</i> , 1998, 44, 1-6.	2.0	50
139	Stability and collective excitations of a two-component Bose-Einstein condensed gas: A moment approach. <i>Physical Review A</i> , 1997, 56, 2978-2983.	2.5	106
140	Graded-index optical fiber emulator of an interacting three-atom system: illumination control of particle statistics and classical non-separability. <i>Quantum - the Open Journal for Quantum Science</i> , 0, 3, 210.	0.0	1
141	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
142	Bloch oscillations in supersolids. <i>Journal of Physics B: Atomic, Molecular and Optical Physics</i> , 0, , .	1.5	0