

# Alexey Gorshkov

## List of Publications by Year in descending order

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Version: 2024-02-01

160  
papers

11,508  
citations

28274

55  
h-index

28297

105  
g-index

163  
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163  
docs citations

163  
times ranked

6613  
citing authors

#	ARTICLE	IF	CITATIONS
1	Circuit Quantum Electrodynamics in Hyperbolic Space: From Photon Bound States to Frustrated Spin Models. <i>Physical Review Letters</i> , 2022, 128, 013601.	7.8	26
2	Localization and Criticality in Antiblockaded Two-Dimensional Rydberg Atom Arrays. <i>Physical Review Letters</i> , 2022, 128, 013603.	7.8	10
3	Rainbow scars: From area to volume law. <i>Physical Review B</i> , 2022, 105, .	3.2	32
4	Unifying Quantum and Classical Speed Limits on Observables. <i>Physical Review X</i> , 2022, 12, .	8.9	28
5	Nearly optimal time-independent reversal of a spin chain. <i>Physical Review Research</i> , 2022, 4, .	3.6	4
6	Crystallography of hyperbolic lattices. <i>Physical Review B</i> , 2022, 105, .	3.2	40
7	Kramers' degeneracy for open systems in thermal equilibrium. <i>Physical Review B</i> , 2022, 105, .	3.2	6
8	Universal scattering with general dispersion relations. <i>Physical Review Research</i> , 2022, 4, .	3.6	0
9	Optical quantum memory for noble-gas spins based on spin-exchange collisions. <i>Physical Review A</i> , 2022, 105, .	2.5	5
10	Measurement-induced quantum phases realized in a trapped-ion quantum computer. <i>Nature Physics</i> , 2022, 18, 760-764.	16.7	87
11	Resonant enhancement of three-body loss between strongly interacting photons. <i>Physical Review Research</i> , 2022, 4, .	3.6	1
12	Quantum Computer Systems for Scientific Discovery. <i>PRX Quantum</i> , 2021, 2, .	9.2	142
13	Optimal Protocols in Quantum Annealing and Quantum Approximate Optimization Algorithm Problems. <i>Physical Review Letters</i> , 2021, 126, 070505.	7.8	51
14	Optimal measurement of field properties with quantum sensor networks. <i>Physical Review A</i> , 2021, 103, .	2.5	10
15	Domain-wall confinement and dynamics in a quantum simulator. <i>Nature Physics</i> , 2021, 17, 742-747.	16.7	56
16	Tunable Three-Body Loss in a Nonlinear Rydberg Medium. <i>Physical Review Letters</i> , 2021, 126, 173401.	7.8	4
17	Critical theory for the breakdown of photon blockade. <i>Physical Review Research</i> , 2021, 3, .	3.6	10
18	Quench Dynamics of a Fermi Gas with Strong Nonlocal Interactions. <i>Physical Review X</i> , 2021, 11, .	8.9	59

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19	Protocols for estimating multiple functions with quantum sensor networks: Geometry and performance. <i>Physical Review Research</i> , 2021, 3, .	3.6	4
20	Optimal State Transfer and Entanglement Generation in Power-Law Interacting Systems. <i>Physical Review X</i> , 2021, 11, .	8.9	18
21	Frustration-induced anomalous transport and strong photon decay in waveguide QED. <i>Physical Review Research</i> , 2021, 3, .	3.6	4
22	Asymmetric Blockade and Multiqubit Gates via Dipole-Dipole Interactions. <i>Physical Review Letters</i> , 2021, 127, 120501.	7.8	26
23	Complexity of Fermionic Dissipative Interactions and Applications to Quantum Computing. <i>PRX Quantum</i> , 2021, 2, .	9.2	5
24	Singularities in nearly uniform one-dimensional condensates due to quantum diffusion. <i>Physical Review A</i> , 2021, 104, .	2.5	1
25	Lieb-Robinson Light Cone for Power-Law Interactions. <i>Physical Review Letters</i> , 2021, 127, 160401.	7.8	36
26	Feedback-stabilized dynamical steady states in the Bose-Hubbard model. <i>Physical Review Research</i> , 2021, 3, .	3.6	7
27	Observation of Stark many-body localization without disorder. <i>Nature</i> , 2021, 599, 393-398.	27.8	69
28	Real-time dynamics of string breaking in quantum spin chains. <i>Physical Review B</i> , 2020, 102, .	3.2	33
29	Signaling and scrambling with strongly long-range interactions. <i>Physical Review A</i> , 2020, 102, .	2.5	27
30	Coherent optical nanotweezers for ultracold atoms. <i>Physical Review A</i> , 2020, 102, .	2.5	6
31	Hierarchy of Linear Light Cones with Long-Range Interactions. <i>Physical Review X</i> , 2020, 10, .	8.9	56
32	Quantum approximate optimization of the long-range Ising model with a trapped-ion quantum simulator. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2020, 117, 25396-25401.	7.1	122
33	Minimal Model for Fast Scrambling. <i>Physical Review Letters</i> , 2020, 125, 130601.	7.8	42
34	Exotic Photonic Molecules via Lennard-Jones-like Potentials. <i>Physical Review Letters</i> , 2020, 125, 093601.	7.8	4
35	Quantum simulation of hyperbolic space with circuit quantum electrodynamics: From graphs to geometry. <i>Physical Review A</i> , 2020, 102, .	2.5	51
36	Symmetry Breaking and Error Correction in Open Quantum Systems. <i>Physical Review Letters</i> , 2020, 125, 240405.	7.8	34

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37	Destructive Error Interference in Product-Formula Lattice Simulation. <i>Physical Review Letters</i> , 2020, 124, 220502.	7.8	20
38	Nonequilibrium Fixed Points of Coupled Ising Models. <i>Physical Review X</i> , 2020, 10, .	8.9	32
39	Nature of the nonequilibrium phase transition in the non-Markovian driven Dicke model. <i>Physical Review A</i> , 2020, 102, .	2.5	5
40	Hilbert-Space Fragmentation from Strict Confinement. <i>Physical Review Letters</i> , 2020, 124, 207602.	7.8	95
41	Circuit complexity across a topological phase transition. <i>Physical Review Research</i> , 2020, 2, .	3.6	34
42	Photon propagation through dissipative Rydberg media at large input rates. <i>Physical Review Research</i> , 2020, 2, .	3.6	19
43	On-demand indistinguishable single photons from an efficient and pure source based on a Rydberg ensemble. <i>Optica</i> , 2020, 7, 813.	9.3	33
44	Entanglement bounds on the performance of quantum computing architectures. <i>Physical Review Research</i> , 2020, 2, .	3.6	4
45	Rydberg Ensemble for Quantum Networking. , 2020, , .		0
46	Fluctuation-Induced Torque on a Topological Insulator out of Thermal Equilibrium. <i>Physical Review Letters</i> , 2019, 123, 055901.	7.8	23
47	Locality and Digital Quantum Simulation of Power-Law Interactions. <i>Physical Review X</i> , 2019, 9, .	8.9	62
48	Floquet engineering of optical lattices with spatial features and periodicity below the diffraction limit. <i>New Journal of Physics</i> , 2019, 21, 113058.	2.9	7
49	Locality and heating in periodically driven, power-law-interacting systems. <i>Physical Review A</i> , 2019, 100, .	2.5	20
50	Probing Ground-State Phase Transitions through Quench Dynamics. <i>Physical Review Letters</i> , 2019, 123, 115701.	7.8	32
51	Interference of Temporally Distinguishable Photons Using Frequency-Resolved Detection. <i>Physical Review Letters</i> , 2019, 123, 123603.	7.8	26
52	Interacting Qubit-Photon Bound States with Superconducting Circuits. <i>Physical Review X</i> , 2019, 9, .	8.9	59
53	Confined Quasiparticle Dynamics in Long-Range Interacting Quantum Spin Chains. <i>Physical Review Letters</i> , 2019, 122, 150601.	7.8	90
54	Interaction-induced transition in the quantum chaotic dynamics of a disordered metal. <i>Annals of Physics</i> , 2019, 405, 1-13.	2.8	8

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55	Scale-Invariant Continuous Entanglement Renormalization of a Chern Insulator. Physical Review Letters, 2019, 122, 120502.	7.8	1
56	Heisenberg-scaling measurement protocol for analytic functions with quantum sensor networks. Physical Review A, 2019, 100, .	2.5	39
57	Nondestructive Cooling of an Atomic Quantum Register via State-Insensitive Rydberg Interactions. Physical Review Letters, 2019, 123, 213603.	7.8	17
58	Heisenberg-scaling measurement protocol for analytic functions with quantum sensor networks. Physical Review A, 2019, 100, .	2.5	0
59	Dark State Optical Lattice with a Subwavelength Spatial Structure. Physical Review Letters, 2018, 120, 083601.	7.8	60
60	Dissipation-induced dipole blockade and antiblockade in driven Rydberg systems. Physical Review A, 2018, 97, .	2.5	29
61	Optimal and secure measurement protocols for quantum sensor networks. Physical Review A, 2018, 97, .	2.5	95
62	Observation of three-photon bound states in a quantum nonlinear medium. Science, 2018, 359, 783-786.	12.6	99
63	Spectrum Estimation of Density Operators with Alkaline-Earth Atoms. Physical Review Letters, 2018, 120, 025301.	7.8	5
64	Photon Subtraction by Many-Body Decoherence. Physical Review Letters, 2018, 120, 113601.	7.8	14
65	Optimization of photon storage fidelity in ordered atomic arrays. New Journal of Physics, 2018, 20, 083048.	2.9	64
66	Fractional Quantum Hall Phases of Bosons with Tunable Interactions: From the Laughlin Liquid to a Fractional Wigner Crystal. Physical Review Letters, 2018, 121, 253403.	7.8	10
67	Unitary entanglement construction in hierarchical networks. Physical Review A, 2018, 98, .	2.5	7
68	Asymmetric Particle Transport and Light-Cone Dynamics Induced by Anyonic Statistics. Physical Review Letters, 2018, 121, 250404.	7.8	18
69	Out-of-time-order correlators in finite open systems. Physical Review B, 2018, 97, .	3.2	36
70	Distributed Quantum Metrology with Linear Networks and Separable Inputs. Physical Review Letters, 2018, 121, 043604.	7.8	136
71	Dynamical Phase Transitions in Sampling Complexity. Physical Review Letters, 2018, 121, 030501.	7.8	29
72	Out-of-time-order correlators in finite open systems. Physical Review B, 2018, 97, .	3.2	2

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73	Exactly soluble model of boundary degeneracy. Physical Review B, 2017, 95, .	3.2	5
74	Exact sampling hardness of Ising spin models. Physical Review A, 2017, 96, .	2.5	7
75	Observation of prethermalization in long-range interacting spin chains. Science Advances, 2017, 3, e1700672.	10.3	114
76	Multicritical behavior in dissipative Ising models. Physical Review A, 2017, 95, .	2.5	47
77	Emergent equilibrium in many-body optical bistability. Physical Review A, 2017, 95, .	2.5	91
78	Correlated Photon Dynamics in Dissipative Rydberg Media. Physical Review Letters, 2017, 119, 043602.	7.8	28
79	Entanglement Area Laws for Long-Range Interacting Systems. Physical Review Letters, 2017, 119, 050501.	7.8	49
80	Lieb-Robinson bounds on n -partite connected correlation functions. Physical Review A, 2017, 96, .	2.5	6
81	Observation of a many-body dynamical phase transition with a 53-qubit quantum simulator. Nature, 2017, 551, 601-604.	27.8	735
82	Spontaneous avalanche dephasing in large Rydberg ensembles. Physical Review A, 2017, 96, .	2.5	26
83	Fast Quantum State Transfer and Entanglement Renormalization Using Long-Range Interactions. Physical Review Letters, 2017, 119, 170503.	7.8	47
84	Solvable Family of Driven-Dissipative Many-Body Systems. Physical Review Letters, 2017, 119, 190402.	7.8	38
85	Continuous Symmetry Breaking in 1D Long-Range Interacting Quantum Systems. Physical Review Letters, 2017, 119, 023001.	7.8	68
86	Efimov States of Strongly Interacting Photons. Physical Review Letters, 2017, 119, 233601.	7.8	24
87	Self-organization of atoms coupled to a chiral reservoir. Physical Review A, 2016, 94, .	2.5	12
88	Subwavelength-width optical tunnel junctions for ultracold atoms. Physical Review A, 2016, 94, .	2.5	35
89	Effective Field Theory for Rydberg Polaritons. Physical Review Letters, 2016, 117, 113601.	7.8	35
90	Collective phases of strongly interacting cavity photons. Physical Review A, 2016, 94, .	2.5	45

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91	Realizing exactly solvable SU(N) magnets with thermal atoms. <i>Physical Review A</i> , 2016, 93, .	2.5	19
92	Nonequilibrium many-body steady states via Keldysh formalism. <i>Physical Review B</i> , 2016, 93, .	3.2	111
93	Topological phases with long-range interactions. <i>Physical Review B</i> , 2016, 93, .	3.2	58
94	Anomalous Broadening in Driven Dissipative Rydberg Systems. <i>Physical Review Letters</i> , 2016, 116, 113001.	7.8	84
95	Causality and quantum criticality in long-range lattice models. <i>Physical Review B</i> , 2016, 93, .	3.2	52
96	Kaleidoscope of quantum phases in a long-range interacting spin-1 chain. <i>Physical Review B</i> , 2016, 93, .	3.2	57
97	Many-body decoherence dynamics and optimized operation of a single-photon switch. <i>New Journal of Physics</i> , 2016, 18, 092001.	2.9	16
98	Bilayer fractional quantum Hall states with dipoles. <i>Physical Review A</i> , 2015, 92, .	2.5	9
99	Publisher's Note: Scattering resonances and bound states for strongly interacting Rydberg polaritons [ <i>Phys. Rev. A</i> 90, 053804 (2014)]. <i>Physical Review A</i> , 2015, 91, .	2.5	0
100	Parafermionic Zero Modes in Ultracold Bosonic Systems. <i>Physical Review Letters</i> , 2015, 115, 065301.	7.8	15
101	Coulomb Bound States of Strongly Interacting Photons. <i>Physical Review Letters</i> , 2015, 115, 123601.	7.8	55
102	Fractional quantum Hall states of Rydberg polaritons. <i>Physical Review A</i> , 2015, 91, .	2.5	42
103	Nearly Linear Light Cones in Long-Range Interacting Quantum Systems. <i>Physical Review Letters</i> , 2015, 114, 157201.	7.8	143
104	Quantum many-body models with cold atoms coupled to photonic crystals. <i>Nature Photonics</i> , 2015, 9, 326-331.	31.4	391
105	Scattering resonances and bound states for strongly interacting Rydberg polaritons. <i>Physical Review A</i> , 2014, 90, .	2.5	78
106	Probing many-body interactions in an optical lattice clock. <i>Annals of Physics</i> , 2014, 340, 311-351.	2.8	52
107	Kitaev Chains with Long-Range Pairing. <i>Physical Review Letters</i> , 2014, 113, 156402.	7.8	164
108	The high-symmetry switch. <i>Nature Physics</i> , 2014, 10, 708-709.	16.7	3

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109	Beyond the Spin Model Approximation for Ramsey Spectroscopy. <i>Physical Review Letters</i> , 2014, 112, 123001.	7.8	5
110	Persistence of Locality in Systems with Power-Law Interactions. <i>Physical Review Letters</i> , 2014, 113, 030602.	7.8	94
111	Non-local propagation of correlations in quantum systems with long-range interactions. <i>Nature</i> , 2014, 511, 198-201.	27.8	581
112	A Quantum Many-Body Spin System in an Optical Lattice Clock. <i>Science</i> , 2013, 341, 632-636.	12.6	152
113	Attractive photons in a quantum nonlinear medium. <i>Nature</i> , 2013, 502, 71-75.	27.8	331
114	Dissipative Many-Body Quantum Optics in Rydberg Media. <i>Physical Review Letters</i> , 2013, 110, 153601.	7.8	82
115	Topologically protected quantum state transfer in a chiral spin liquid. <i>Nature Communications</i> , 2013, 4, 1585.	12.8	67
116	Realizing Fractional Chern Insulators in Dipolar Spin Systems. <i>Physical Review Letters</i> , 2013, 110, 185302.	7.8	167
117	Kitaev honeycomb and other exotic spin models with polar molecules. <i>Molecular Physics</i> , 2013, 111, 1908-1916.	1.7	55
118	Topological phases in ultracold polar-molecule quantum magnets. <i>Physical Review B</i> , 2013, 87, .	3.2	94
119	Quantum logic between remote quantum registers. <i>Physical Review A</i> , 2013, 87, .	2.5	35
120	Controllable quantum spin glasses with magnetic impurities embedded in quantum solids. <i>Physical Review B</i> , 2013, 88, .	3.2	9
121	Topological Flat Bands from Dipolar Spin Systems. <i>Physical Review Letters</i> , 2012, 109, 266804.	7.8	96
122	Cavity QED with atomic mirrors. <i>New Journal of Physics</i> , 2012, 14, 063003.	2.9	205
123	Scalable architecture for a room temperature solid-state quantum information processor. <i>Nature Communications</i> , 2012, 3, 800.	12.8	190
124	Structure of He-10 Low-Lying States Uncovered by Correlations. <i>Physical Review Letters</i> , 2012, 108, 202502.	7.8	43
125	Quantum nonlinear optics with single photons enabled by strongly interacting atoms. <i>Nature</i> , 2012, 488, 57-60.	27.8	679
126	Robust Quantum State Transfer in Random Unpolarized Spin Chains. <i>Physical Review Letters</i> , 2011, 106, 040505.	7.8	194



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127	Photon-Photon Interactions via Rydberg Blockade. Physical Review Letters, 2011, 107, 133602.	7.8	305
128	Light storage in an optically thick atomic ensemble under conditions of electromagnetically induced transparency and four-wave mixing. Physical Review A, 2011, 83, .	2.5	59
129	$\langle \text{mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"> \langle \text{mml:mi} \rangle \text{d} \langle \text{mml:mi} \rangle \langle \text{mml:math} \rangle \text{-wave superfluidity in optical lattices of ultracold polar molecules. Physical Review A, 2011, 84, .}$	2.5	23
130	Quantum magnetism with polar alkali-metal dimers. Physical Review A, 2011, 84, .	2.5	142
131	Spectroscopy of dipolar fermions in layered two-dimensional and three-dimensional lattices. Physical Review A, 2011, 84, .	2.5	12
132	Tunable Superfluidity and Quantum Magnetism with Ultracold Polar Molecules. Physical Review Letters, 2011, 107, 115301.	7.8	257
133	Resolved Atomic Interaction Sidebands in an Optical Clock Transition. Physical Review Letters, 2011, 106, 250801.	7.8	19
134	Two-orbital S U(N) magnetism with ultracold alkaline-earth atoms. Nature Physics, 2010, 6, 289-295.	16.7	572
135	Far-field optical imaging and manipulation of individual spins with nanoscale resolution. Nature Physics, 2010, 6, 912-918.	16.7	142
136	Fast entanglement distribution with atomic ensembles and fluorescent detection. Physical Review A, 2010, 81, .	2.5	16
137	Photonic Phase Gate via an Exchange of Fermionic Spin Waves in a Spin Chain. Physical Review Letters, 2010, 105, 060502.	7.8	36
138	Alkaline-Earth-Metal Atoms as Few-Qubit Quantum Registers. Physical Review Letters, 2009, 102, 110503.	7.8	135
139	Many-Body Treatment of the Collisional Frequency Shift in Fermionic Atoms. Physical Review Letters, 2009, 103, 260402.	7.8	43
140	Realization of coherent optically dense media via buffer-gas cooling. Physical Review A, 2009, 79, .	2.5	20
141	Slow light propagation and amplification via electromagnetically induced transparency and four-wave mixing in an optically dense atomic vapor. Journal of Modern Optics, 2009, 56, 1916-1925.	1.3	22
142	Slow and stored light manipulations at high atomic densities. , 2009, , .		0
143	Four-Wave Mixing in a Stored Light Regime. , 2009, , .		0
144	Optimal light storage with full pulse-shape control. Physical Review A, 2008, 78, .	2.5	81

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145	Anyonic interferometry and protected memories in atomic spin lattices. Nature Physics, 2008, 4, 482-488.	16.7	97
146	Coherent Quantum Optical Control with Subwavelength Resolution. Physical Review Letters, 2008, 100, 093005.	7.8	135
147	Suppression of Inelastic Collisions Between Polar Molecules With a Repulsive Shield. Physical Review Letters, 2008, 101, 073201.	7.8	84
148	Optimal light storage in atomic vapor. Physical Review A, 2008, 78, .	2.5	104
149	Photon storage in $\hat{b}$ -type optically dense atomic media. IV. Optimal control using gradient ascent. Physical Review A, 2008, 77, .	2.5	62
150	Optimizing slow and stored light for multidisciplinary applications. , 2008, , .		6
151	Optimization of slow and stored light in atomic vapor. , 2007, 6482, 121.		2
152	Photon storage in $\hat{b}$ -type optically dense atomic media. II. Free-space model. Physical Review A, 2007, 76, .	2.5	193
153	Multi-photon entanglement: from quantum curiosity to quantum computing and quantum repeaters. , 2007, , .		0
154	Photon storage in $\hat{b}$ -type optically dense atomic media. III. Effects of inhomogeneous broadening. Physical Review A, 2007, 76, .	2.5	67
155	Photon storage in $\hat{b}$ -type optically dense atomic media. I. Cavity model. Physical Review A, 2007, 76, .	2.5	180
156	Universal Approach to Optimal Photon Storage in Atomic Media. Physical Review Letters, 2007, 98, 123601.	7.8	306
157	Optimal Control of Light Pulse Storage and Retrieval. Physical Review Letters, 2007, 98, 243602.	7.8	189
158	Signatures of Incoherence in a Quantum Information Processor. Quantum Information Processing, 2007, 6, 431-444.	2.2	4
159	Optimizing Slow and Stored Light via EIT in Alkali Vapor. , 2007, , .		0
160	Quantum routing with fast reversals. Quantum - the Open Journal for Quantum Science, 0, 5, 533.	0.0	6