

Ana MarÃ-a Rey

List of Publications by Year in descending order

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134
papers

8,800
citations

46918

47
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42291

92
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136
all docs

136
docs citations

136
times ranked

4485
citing authors

#	ARTICLE	IF	CITATIONS
1	Observation of dipolar spin-exchange interactions with lattice-confined polar molecules. <i>Nature</i> , 2013, 501, 521-525.	13.7	671
2	Two-orbital S U(N) magnetism with ultracold alkaline-earth atoms. <i>Nature Physics</i> , 2010, 6, 289-295.	6.5	572
3	Measuring out-of-time-order correlations and multiple quantum spectra in a trapped-ion quantum magnet. <i>Nature Physics</i> , 2017, 13, 781-786.	6.5	421
4	Quantum spin dynamics and entanglement generation with hundreds of trapped ions. <i>Science</i> , 2016, 352, 1297-1301.	6.0	369
5	Cold molecules: Progress in quantum engineering of chemistry and quantum matter. <i>Science</i> , 2017, 357, 1002-1010.	6.0	320
6	Spectroscopic observation of SU(N)-symmetric interactions in Sr orbital magnetism. <i>Science</i> , 2014, 345, 1467-1473.	6.0	290
7	Tunable Superfluidity and Quantum Magnetism with Ultracold Polar Molecules. <i>Physical Review Letters</i> , 2011, 107, 115301.	2.9	257
8	Ultracold Fermi gases with emergent SU(N) symmetry. <i>Reports on Progress in Physics</i> , 2014, 77, 124401.	8.1	223
9	Long-Lived Dipolar Molecules and Feshbach Molecules in a 3D Optical Lattice. <i>Physical Review Letters</i> , 2012, 108, 080405.	2.9	207
10	Mott Insulators of Ultracold Fermionic Alkaline Earth Atoms: Underconstrained Magnetism and Chiral Spin Liquid. <i>Physical Review Letters</i> , 2009, 103, 135301.	2.9	195
11	Spin-orbit-coupled fermions in an optical lattice clock. <i>Nature</i> , 2017, 542, 66-70.	13.7	195
12	Two-particle quantum interference in tunnel-coupled optical tweezers. <i>Science</i> , 2014, 345, 306-309.	6.0	174
13	Many-Body Dynamics of Dipolar Molecules in an Optical Lattice. <i>Physical Review Letters</i> , 2014, 113, 195302.	2.9	162
14	A Quantum Many-Body Spin System in an Optical Lattice Clock. <i>Science</i> , 2013, 341, 632-636.	6.0	152
15	Collective atomic scattering and motional effects in a dense coherent medium. <i>Nature Communications</i> , 2016, 7, 11039.	5.8	145
16	Quantum magnetism with polar alkali-metal dimers. <i>Physical Review A</i> , 2011, 84, .	1.0	142
17	Suppression of Collisional Shifts in a Strongly Interacting Lattice Clock. <i>Science</i> , 2011, 331, 1043-1046.	6.0	138
18	Unifying scrambling, thermalization and entanglement through measurement of fidelity out-of-time-order correlators in the Dicke model. <i>Nature Communications</i> , 2019, 10, 1581.	5.8	131

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19	Cavity-mediated collective spin-exchange interactions in a strontium superradiant laser. <i>Science</i> , 2018, 361, 259-262.	6.0	124
20	Suppressing the Loss of Ultracold Molecules Via the Continuous Quantum Zeno Effect. <i>Physical Review Letters</i> , 2014, 112, 070404.	2.9	117
21	Many-Body Quantum Spin Dynamics with Monte-Carlo Trajectories on a Discrete Phase Space. <i>Physical Review X</i> , 2015, 5, .	2.8	115
22	Entangling two transportable neutral atoms via local spin exchange. <i>Nature</i> , 2015, 527, 208-211.	13.7	114
23	Exploring dynamical phase transitions with cold atoms in an optical cavity. <i>Nature</i> , 2020, 580, 602-607.	13.7	111
24	Synthetic Spin-Orbit Coupling in an Optical Lattice Clock. <i>Physical Review Letters</i> , 2016, 116, 035301.	2.9	99
25	Topological phases in ultracold polar-molecule quantum magnets. <i>Physical Review B</i> , 2013, 87, .	1.1	94
26	Probing the Kondo lattice model with alkaline-earth-metal atoms. <i>Physical Review A</i> , 2010, 81, .	1.0	93
27	Relating Out-of-Time-Order Correlations to Entanglement via Multiple-Quantum Coherences. <i>Physical Review Letters</i> , 2018, 120, 040402.	2.9	93
28	Far-from-Equilibrium Quantum Magnetism with Ultracold Polar Molecules. <i>Physical Review Letters</i> , 2013, 110, 075301.	2.9	90
29	Verification of a Many-Ion Simulator of the Dicke Model Through Slow Quenches across a Phase Transition. <i>Physical Review Letters</i> , 2018, 121, 040503.	2.9	90
30	Bogoliubov approach to superfluidity of atoms in an optical lattice. <i>Journal of Physics B: Atomic, Molecular and Optical Physics</i> , 2003, 36, 825-841.	0.6	88
31	Ultracold atoms confined in an optical lattice plus parabolic potential: A closed-form approach. <i>Physical Review A</i> , 2005, 72, .	1.0	87
32	40 years of the quantum Hall effect. <i>Nature Reviews Physics</i> , 2020, 2, 397-401.	11.9	84
33	Nonequilibrium dynamics of optical-lattice-loaded Bose-Einstein-condensate atoms: Beyond the Hartree-Fock-Bogoliubov approximation. <i>Physical Review A</i> , 2004, 69, .	1.0	80
34	Synchronization of interacting quantum dipoles. <i>New Journal of Physics</i> , 2015, 17, 083063.	1.2	80
35	Quantum correlations and entanglement in far-from-equilibrium spin systems. <i>Physical Review A</i> , 2014, 90, .	1.0	77
36	Variational Spin-Squeezing Algorithms on Programmable Quantum Sensors. <i>Physical Review Letters</i> , 2019, 123, 260505.	2.9	72

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37	Bragg spectroscopy of ultracold atoms loaded in an optical lattice. <i>Physical Review A</i> , 2005, 72, .	1.0	71
38	SU(N)magnetism in chains of ultracold alkaline-earth-metal atoms: Mott transitions and quantum correlations. <i>Physical Review A</i> , 2011, 84, .	1.0	71
39	Observation of a transition between dynamical phases in a quantum degenerate Fermi gas. <i>Science Advances</i> , 2019, 5, eaax1568.	4.7	69
40	Nonequilibrium dynamics of arbitrary-range Ising models with decoherence: An exact analytic solution. <i>Physical Review A</i> , 2013, 87, .	1.0	68
41	Quantum-enhanced sensing of displacements and electric fields with two-dimensional trapped-ion crystals. <i>Science</i> , 2021, 373, 673-678.	6.0	67
42	Light scattering from dense cold atomic media. <i>Physical Review A</i> , 2016, 94, .	1.0	61
43	Shattered time: can a dissipative time crystal survive many-body correlations?. <i>New Journal of Physics</i> , 2018, 20, 123003.	1.2	61
44	Emergence of multi-body interactions in a fermionic lattice clock. <i>Nature</i> , 2018, 563, 369-373.	13.7	60
45	Kitaev honeycomb and other exotic spin models with polar molecules. <i>Molecular Physics</i> , 2013, 111, 1908-1916.	0.8	55
46	Dynamics of interacting fermions under spin-orbit coupling in an optical lattice clock. <i>Nature Physics</i> , 2018, 14, 399-404.	6.5	53
47	Dynamics of quantum information. <i>Nature Reviews Physics</i> , 2019, 1, 627-634.	11.9	53
48	Dynamics of correlations in two-dimensional quantum spin models with long-range interactions: a phase-space Monte-Carlo study. <i>New Journal of Physics</i> , 2015, 17, 065009.	1.2	52
49	High-temperature properties of fermionic alkaline-earth-metal atoms in optical lattices. <i>Physical Review A</i> , 2012, 85, .	1.0	47
50	Many-body protected entanglement generation in interacting spin systems. <i>Physical Review A</i> , 2008, 77, .	1.0	46
51	Robust Spin Squeezing via Photon-Mediated Interactions on an Optical Clock Transition. <i>Physical Review Letters</i> , 2018, 121, 070403.	2.9	45
52	Out-of-equilibrium quantum magnetism and thermalization in a spin-3 many-body dipolar lattice system. <i>Nature Communications</i> , 2019, 10, 1714.	5.8	44
53	Many-Body Treatment of the Collisional Frequency Shift in Fermionic Atoms. <i>Physical Review Letters</i> , 2009, 103, 260402.	2.9	43
54	Doublon dynamics and polar molecule production in an optical lattice. <i>Nature Communications</i> , 2016, 7, 11279.	5.8	42

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55	Heavy fermions in an optical lattice. <i>Physical Review A</i> , 2010, 82, .	1.0	41
56	Adiabatic Loading of One-Dimensional $SU(N)$ -Symmetric Fermi Gas. <i>Physical Review Letters</i> , 2012, 109, 205305.	1.0	41
57	Spin-orbital dynamics in a system of polar molecules. <i>Nature Communications</i> , 2014, 5, 5391.	5.8	41
58	Controlling dipolar exchange interactions in a dense three-dimensional array of large-spin fermions. <i>Physical Review Research</i> , 2020, 2, .	1.3	39
59	Thermodynamics of a deeply degenerate $SU(N)$ -symmetric Fermi gas. <i>Nature Physics</i> , 2020, 16, 1216-1221.	6.5	38
60	Quantum dynamics of disordered spin chains with power-law interactions. <i>Physical Review A</i> , 2019, 99, .	1.0	37
61	Simulating generic spin-boson models with matrix product states. <i>Physical Review A</i> , 2016, 94, .	1.0	36
62	Cavity-QED simulator of slow and fast scrambling. <i>Physical Review A</i> , 2019, 99, .	1.0	35
63	Operating a ^{87}Sr optical lattice clock with high precision and at high density. <i>IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control</i> , 2012, 59, 416-425.	1.7	34
64	Bang-bang shortcut to adiabaticity in the Dicke model as realized in a Penning trap experiment. <i>New Journal of Physics</i> , 2018, 20, 055013.	1.2	34
65	A generalized phase space approach for solving quantum spin dynamics. <i>New Journal of Physics</i> , 2019, 21, 082001.	1.2	34
66	Spin Squeezing with Short-Range Spin-Exchange Interactions. <i>Physical Review Letters</i> , 2020, 125, 223401.	2.9	34
67	Steady-State Many-Body Entanglement of Hot Reactive Fermions. <i>Physical Review Letters</i> , 2012, 109, 230501.	2.9	32
68	Driven-dissipative quantum dynamics in ultra-long-lived dipoles in an optical cavity. <i>Physical Review A</i> , 2019, 99, .	1.0	31
69	Nonequilibrium dynamics of spin-boson models from phase-space methods. <i>Physical Review A</i> , 2017, 96, .	1.0	30
70	Boson-mediated quantum spin simulators in transverse fields: XY model and spin-boson entanglement. <i>Physical Review A</i> , 2017, 95, .	1.0	27
71	Exploring many-body localization and thermalization using semiclassical methods. <i>Physical Review A</i> , 2017, 96, .	1.0	25
72	Engineering spin squeezing in a 3D optical lattice with interacting spin-orbit-coupled fermions. <i>Physical Review Research</i> , 2019, 1, .	1.3	25

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73	Emergent Weyl excitations in systems of polar particles. Nature Communications, 2016, 7, 13543.	5.8	24
74	Spin squeezing and many-body dipolar dynamics in optical lattice clocks. Physical Review A, 2019, 100, .	1.0	24
75	Dark States of Multilevel Fermionic Atoms in Doubly Filled Optical Lattices. Physical Review Letters, 2019, 123, 223601.	2.9	24
76	$\langle \text{mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"} \rangle \langle \text{mml:mi} \rangle d \langle \text{mml:mi} \rangle \langle \text{mml:math} \rangle$ -wave superfluidity in optical lattices of ultracold polar molecules. Physical Review A, 2011, 84, .	1.0	23
77	Self-Trapping in an Array of Coupled 1D Bose Gases. Physical Review Letters, 2013, 110, 033001.	2.9	23
78	Emergent Dark States from Superradiant Dynamics in Multilevel Atoms in a Cavity. Physical Review X, 2022, 12, .	2.8	23
79	Synthetic-gauge-field stabilization of the chiral-spin-liquid phase. Physical Review A, 2016, 93, .	1.0	21
80	Dynamics of Interacting Fermions in Spin-Dependent Potentials. Physical Review Letters, 2016, 117, 195302.	2.9	21
81	Measurement-Based Entanglement of Noninteracting Bosonic Atoms. Physical Review Letters, 2018, 120, 193602.	2.9	21
82	Realizing exactly solvable SU(N) magnets with thermal atoms. Physical Review A, 2016, 93, .	1.0	19
83	Dynamical Generation of Spin Squeezing in Ultracold Dipolar Molecules. Physical Review Letters, 2021, 126, 113401.	2.9	19
84	Cavity-QED Quantum Simulator of Dynamical Phases of a Bardeen-Cooper-Schrieffer Superconductor. Physical Review Letters, 2021, 126, 173601.	2.9	19
85	An approach to spin-resolved molecular gas microscopy. New Journal of Physics, 2018, 20, 043031.	1.2	18
86	Reactions between layer-resolved molecules mediated by dipolar spin exchange. Science, 2022, 375, 1299-1303.	6.0	18
87	Quantum kinetic theory of a Bose-Einstein gas confined in a lattice. Physical Review A, 2005, 72, .	1.0	17
88	Evaporative cooling of reactive polar molecules confined in a two-dimensional geometry. Physical Review A, 2013, 88, .	1.0	17
89	Equilibrium phases of tilted dipolar lattice bosons. New Journal of Physics, 2015, 17, 123014.	1.2	17
90	Mean-field treatment of the damping of the oscillations of a one-dimensional Bose gas in an optical lattice. Physical Review A, 2006, 73, .	1.0	16

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91	Cluster State Generation with Spin-Orbit Coupled Fermionic Atoms in Optical Lattices. Physical Review Letters, 2019, 122, 160402.	2.9	15
92	Detecting Out-of-Time-Order Correlations via Quasiadiabatic Echoes as a Tool to Reveal Quantum Coherence in Equilibrium Quantum Phase Transitions. Physical Review Letters, 2020, 125, 240605.	2.9	15
93	Protocol for Precise Field Sensing in the Optical Domain with Cold Atoms in a Cavity. Physical Review Letters, 2020, 124, 193602.	2.9	15
94	Bose-Einstein-condensate superfluidity Mott-insulator transition in an optical lattice. Physical Review A, 2006, 73, .	1.0	14
95	Relaxation of the Collective Magnetization of a Dense 3D Array of Interacting Dipolar Atoms. Physical Review Letters, 2020, 125, 143401.	2.9	14
96	Effect of Active Photons on Dynamical Frustration in Cavity QED. Physical Review Letters, 2021, 126, 133603.	2.9	14
97	Simulation of $X^2 + Y^2 + Z^2$ Spin Models Using Sideband Transitions in Trapped Bosonic Gases. Physical Review Letters, 2020, 125, 240504.	2.9	13
98	Characterizing the dynamical phase diagram of the Dicke model via classical and quantum probes. Physical Review Research, 2021, 3, .	1.3	13
99	Spectroscopy of dipolar fermions in layered two-dimensional and three-dimensional lattices. Physical Review A, 2011, 84, .	1.0	12
100	Effective many-body parameters for atoms in nonseparable Gaussian optical potentials. Physical Review A, 2015, 92, .	1.0	12
101	Demagnetization dynamics of noninteracting trapped fermions. Physical Review A, 2015, 92, .	1.0	12
102	Quantum Magnetism with Ultracold Molecules. , 2015, , 3-37.		12
103	Realistic simulations of spin squeezing and cooperative coupling effects in large ensembles of interacting two-level systems. Physical Review A, 2022, 105, .	1.0	12
104	Subradiance of multilevel fermionic atoms in arrays with filling $n > 2$. Physical Review A, 2020, 101, .		
105	Tunable-spin-model generation with spin-orbit-coupled fermions in optical lattices. Physical Review Research, 2021, 3, .	1.3	11
106	Spin mixing and protection of ferromagnetism in a spinor dipolar condensate. Physical Review A, 2018, 97, .	1.0	10
107	Quantum Enhanced Cavity QED Interferometer with Partially Delocalized Atoms in Lattices. Physical Review Letters, 2021, 127, 210401.	2.9	10
108	Engineering infinite-range $SU(N)$ interactions with spin-orbit-coupled fermions in an optical lattice. Physical Review A, 2022, 105, .		

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109	Quantum dynamics of solitons in strongly interacting systems on optical lattices. <i>Physical Review A</i> , 2012, 85, .	1.0	9
110	Dynamics of an itinerant spin-3 atomic dipolar gas in an optical lattice. <i>Physical Review A</i> , 2019, 100, .	1.0	9
111	Dipole-Dipole Frequency Shifts in Multilevel Atoms. <i>Physical Review Letters</i> , 2021, 127, 013401.	2.9	9
112	Strong correlations in quantum vortex nucleation of ultracold atomic gases. <i>Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences</i> , 2010, 466, 1247-1263.	1.0	7
113	Facilitating spin squeezing generated by collective dynamics with single-particle decoherence. <i>Physical Review A</i> , 2020, 102, .	1.0	7
114	Quantum many-body physics with ultracold polar molecules: Nanostructured potential barriers and interactions. <i>Physical Review A</i> , 2020, 102, .	1.0	7
115	Quantum Computation Toolbox for Decoherence-free Qubits Using Multi-band Alkali Atoms. <i>Advanced Quantum Technologies</i> , 2020, 3, 1900132.	1.8	6
116	Self-trapping dynamics in a two-dimensional optical lattice. <i>Physical Review A</i> , 2013, 88, .	1.0	5
117	Beyond the Spin Model Approximation for Ramsey Spectroscopy. <i>Physical Review Letters</i> , 2014, 112, 123001.	2.9	5
118	Spectrum Estimation of Density Operators with Alkaline-Earth Atoms. <i>Physical Review Letters</i> , 2018, 120, 025301.	2.9	5
119	Doublon dynamics of Bose-Fermi mixtures in optical lattices. <i>Physical Review A</i> , 2019, 100, .	1.0	5
120	Disorder-controlled relaxation in a three-dimensional Hubbard model quantum simulator. <i>Physical Review Research</i> , 2021, 3, .	1.3	5
121	Exploring chemical reactions in a quantum degenerate gas of polar molecules via complex formation. <i>Physical Review A</i> , 2020, 102, .	1.0	5
122	Universality class of quantum criticality in the two-dimensional Hubbard model at intermediate temperatures ($t_2/U \ll T \ll t$). <i>Physical Review B</i> , 2013, 87, .	1.1	4
123	Effective multi-body $SU(N)$ -symmetric interactions of ultracold fermionic atoms on a 3D lattice. <i>New Journal of Physics</i> , 2019, 21, 043039.	1.2	4
124	Measuring Correlations from the Collective Spin Fluctuations of a Large Ensemble of Lattice-Trapped Dipolar Spin-3 Atoms. <i>Physical Review Letters</i> , 2022, 129, .	2.9	4
125	Spin qudit tomography and state reconstruction error. <i>Physical Review A</i> , 2021, 104, .	1.0	3
126	Short-time expansion of Heisenberg operators in open collective quantum spin systems. <i>Physical Review A</i> , 2020, 101, .	1.0	2

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127	Collective P -Wave Orbital Dynamics of Ultracold Fermions. Physical Review Letters, 2021, 127, 143401.	2.9	2
128	Disentangling Pauli Blocking of Atomic Decay from Cooperative Radiation and Atomic Motion in a 2D Fermi Gas. Physical Review Letters, 2022, 128, 093001.	2.9	2
129	Synthetic gauge fields for ultracold atoms. National Science Review, 2016, 3, 166-167.	4.6	1
130	Atom-light entanglement for precise field sensing in the optical domain. Physical Review A, 2020, 102, .	1.0	1
131	Generating Multipartite Spin States with Fermionic Atoms in a Driven Optical Lattice. Physical Review Letters, 2020, 124, 240401.	2.9	1
132	Suppression of collisional frequency shifts in an optical lattice clock. , 2011, , .		0
133	Observing the Great Spin and Orbital Swap. Physics Magazine, 2014, 7, .	0.1	0
134	Topological superfluidity with repulsive fermionic atoms. , 2018, , 126-146.		0