Ana MarÃ-a Rey

List of Publications by Year
in descending order

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134 papers	8,800 citations	46918 47 h-index	42291 92 g-index
136 all docs	136 docs citations	136 times ranked	4485 citing authors

#	Article	IF	Citations
1	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
2	Engineering infinite-range <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML"><mml:mrow><mml:mi>SU</mml:mi><mml:mo>(</mml:mo><mml:mi>N</mml:mi></mml:mrow></mml:math> interactions with spin-orbit-coupled fermions in an optical lattice. Physical Review A, 2022, 105, .	1.0	10
3	Emergent Dark States from Superradiant Dynamics in Multilevel Atoms in a Cavity. Physical Review X, 2022, 12, .	2.8	23
4	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
5	Reactions between layer-resolved molecules mediated by dipolar spin exchange. Science, 2022, 375, 1299-1303.	6.0	18
6	Measuring Correlations from the Collective Spin Fluctuations of a Large Ensemble of Lattice-Trapped Dipolar Spin-3 Atoms. Physical Review Letters, 2022, 129, .	2.9	4
7	Disorder-controlled relaxation in a three-dimensional Hubbard model quantum simulator. Physical Review Research, 2021, 3, .	1.3	5
8	Tunable-spin-model generation with spin-orbit-coupled fermions in optical lattices. Physical Review Research, 2021, 3, .	1.3	11
9	Dynamical Generation of Spin Squeezing in Ultracold Dipolar Molecules. Physical Review Letters, 2021, 126, 113401.	2.9	19
10	Cavity-QED Quantum Simulator of Dynamical Phases of a Bardeen-Cooper-Schrieffer Superconductor. Physical Review Letters, 2021, 126, 173601.	2.9	19
11	Effect of Active Photons on Dynamical Frustration in Cavity QED. Physical Review Letters, 2021, 126, 133603.	2.9	14
12	Characterizing the dynamical phase diagram of the Dicke model via classical and quantum probes. Physical Review Research, 2021, 3, .	1.3	13
13	Dipole-Dipole Frequency Shifts in Multilevel Atoms. Physical Review Letters, 2021, 127, 013401.	2.9	9
14	Quantum-enhanced sensing of displacements and electric fields with two-dimensional trapped-ion crystals. Science, 2021, 373, 673-678.	6.0	67
15	Collective P -Wave Orbital Dynamics of Ultracold Fermions. Physical Review Letters, 2021, 127, 143401.	2.9	2
16	Quantum Enhanced Cavity QED Interferometer with Partially Delocalized Atoms in Lattices. Physical Review Letters, 2021, 127, 210401.	2.9	10
17	Spin qudit tomography and state reconstruction error. Physical Review A, 2021, 104, .	1.0	3
18	Relaxation of the Collective Magnetization of a Dense 3D Array of Interacting Dipolar<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mi>S</mml:mi><mml:mo>=</mml:mo><mml:mn>3</mml:mn></mml:math>Atoms. Physical Review Letters, 2020, 125, 143401.	2.9	14

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19	40 years of the quantum Hall effect. Nature Reviews Physics, 2020, 2, 397-401.	11.9	84
20	Facilitating spin squeezing generated by collective dynamics with single-particle decoherence. Physical Review A, 2020, 102, .	1.0	7
21	Quantum many-body physics with ultracold polar molecules: Nanostructured potential barriers and interactions. Physical Review A, 2020, 102, .	1.0	7
22	Thermodynamics of a deeply degenerate SU(N)-symmetric Fermi gas. Nature Physics, 2020, 16, 1216-1221.	6.5	38
23	Simulation of <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mi>X</mml:mi><mml:mi>X</mml:mi><mml:mi>Z</mml:mi></mml:math> Spin Models Using Sideband Transitions in Trapped Bosonic Gases. Physical Review Letters, 2020, 125, 240504.	2.9	13
24	Atom-light entanglement for precise field sensing in the optical domain. Physical Review A, 2020, 102, .	1.0	1
25	Spin Squeezing with Short-Range Spin-Exchange Interactions. Physical Review Letters, 2020, 125, 223401.	2.9	34
26	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
27	Protocol for Precise Field Sensing in the Optical Domain with Cold Atoms in a Cavity. Physical Review Letters, 2020, 124, 193602.	2.9	15
28	Generating Multipartite Spin States with Fermionic Atoms in a Driven Optical Lattice. Physical Review Letters, 2020, 124, 240401.	2.9	1
29	Short-time expansion of Heisenberg operators in open collective quantum spin systems. Physical Review A, 2020, 101, .	1.0	2
30	Exploring dynamical phase transitions with cold atoms inÂan opticalÂ cavity. Nature, 2020, 580, 602-607.	13.7	111
31	Quantum Computation Toolbox for Decoherenceâ€Free Qubits Using Multiâ€Band Alkali Atoms. Advanced Quantum Technologies, 2020, 3, 1900132.	1.8	6
32	Subradiance of multilevel fermionic atoms in arrays with filling <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML"><mml:mrow><mml:mi>n</mml:mi><mml:mo>â‰¥</mml:mo><mml:mn>2</mml:mn></mml:mrow></mml:math>, Physical Review A, 2020, 101, .	1.0	11
33	Controlling dipolar exchange interactions in a dense three-dimensional array of large-spin fermions. Physical Review Research, 2020, 2, .	1.3	39
34	Exploring chemical reactions in a quantum degenerate gas of polar molecules via complex formation. Physical Review A, 2020, 102, .	1.0	5
35	Effective multi-body SU(N)-symmetric interactions of ultracold fermionic atoms on a 3D lattice. New Journal of Physics, 2019, 21, 043039.	1.2	4
36	A generalized phase space approach for solving quantum spin dynamics. New Journal of Physics, 2019, 21, 082001.	1.2	34

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37	Observation of a transition between dynamical phases in a quantum degenerate Fermi gas. Science Advances, 2019, 5, eaax1568.	4.7	69
38	Spin squeezing and many-body dipolar dynamics in optical lattice clocks. Physical Review A, 2019, 100, .	1.0	24
39	Dynamics of quantum information. Nature Reviews Physics, 2019, 1, 627-634.	11.9	53
40	Dynamics of an itinerant spin-3 atomic dipolar gas in an optical lattice. Physical Review A, 2019, 100, .	1.0	9
41	Driven-dissipative quantum dynamics in ultra-long-lived dipoles in an optical cavity. Physical Review A, 2019, 99, .	1.0	31
42	Cavity-QED simulator of slow and fast scrambling. Physical Review A, 2019, 99, .	1.0	35
43	Unifying scrambling, thermalization and entanglement through measurement of fidelity out-of-time-order correlators in the Dicke model. Nature Communications, 2019, 10, 1581.	5.8	131
44	Out-of-equilibrium quantum magnetism and thermalization in a spin-3 many-body dipolar lattice system. Nature Communications, 2019, 10, 1714.	5.8	44
45	Cluster State Generation with Spin-Orbit Coupled Fermionic Atoms in Optical Lattices. Physical Review Letters, 2019, 122, 160402.	2.9	15
46	Quantum dynamics of disordered spin chains with power-law interactions. Physical Review A, 2019, 99, .	1.0	37
47	Variational Spin-Squeezing Algorithms on Programmable Quantum Sensors. Physical Review Letters, 2019, 123, 260505.	2.9	72
48	Dark States of Multilevel Fermionic Atoms in Doubly Filled Optical Lattices. Physical Review Letters, 2019, 123, 223601.	2.9	24
49	Doublon dynamics of Bose-Fermi mixtures in optical lattices. Physical Review A, 2019, 100, .	1.0	5
50	Engineering spin squeezing in a 3D optical lattice with interacting spin-orbit-coupled fermions. Physical Review Research, 2019, 1, .	1.3	25
51	Dynamics of interacting fermions under spinâ€“orbit coupling in an optical lattice clock. Nature Physics, 2018, 14, 399-404.	6.5	53
52	Spin mixing and protection of ferromagnetism in a spinor dipolar condensate. Physical Review A, 2018, 97, .	1.0	10
53	Relating Out-of-Time-Order Correlations to Entanglement via Multiple-Quantum Coherences. Physical Review Letters, 2018, 120, 040402.	2.9	93
54	Spectrum Estimation of Density Operators with Alkaline-Earth Atoms. Physical Review Letters, 2018, 120, 025301.	2.9	5

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55	Shattered time: can a dissipative time crystal survive many-body correlations?. New Journal of Physics, 2018, 20, 123003.	1.2	61
56	An approach to spin-resolved molecular gas microscopy. New Journal of Physics, 2018, 20, 043031.	1.2	18
57	Emergence of multi-body interactions in a fermionic lattice clock. Nature, 2018, 563, 369-373.	13.7	60
58	Bang-bang shortcut to adiabaticity in the Dicke model as realized in a Penning trap experiment. New Journal of Physics, 2018, 20, 055013.	1.2	34
59	Verification of a Many-Ion Simulator of the Dicke Model Through Slow Quenches across a Phase Transition. Physical Review Letters, 2018, 121, 040503.	2.9	90
60	Cavity-mediated collective spin-exchange interactions in a strontium superradiant laser. Science, 2018, 361, 259-262.	6.0	124
61	Measurement-Based Entanglement of Noninteracting Bosonic Atoms. Physical Review Letters, 2018, 120, 193602.	2.9	21
62	Robust Spin Squeezing via Photon-Mediated Interactions on an Optical Clock Transition. Physical Review Letters, 2018, 121, 070403.	2.9	45
63	Topological superfluidity with repulsive fermionic atoms. , 2018, , 126-146.		0
64	Measuring out-of-time-order correlations and multiple quantum spectra in a trapped-ion quantum magnet. Nature Physics, 2017, 13, 781-786.	6.5	421
65	Spinâ€“orbit-coupled fermions in an optical lattice clock. Nature, 2017, 542, 66-70.	13.7	195
66	Boson-mediated quantum spin simulators in transverse fields: <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML"><mml:mrow><mml:mi>X</mml:mi><mml:mi>Y</mml:mi></mml:mrow model and spin-boson entanglement. Physical Review A, 2017, 95, .	1.0	27
67	Nonequilibrium dynamics of spin-boson models from phase-space methods. Physical Review A, 2017, 96, .	1.0	30
68	Exploring many-body localization and thermalization using semiclassical methods. Physical Review A, 2017, 96, .	1.0	25
69	Cold molecules: Progress in quantum engineering of chemistry and quantum matter. Science, 2017, 357, 1002-1010.	6.0	320
70	Simulating generic spin-boson models with matrix product states. Physical Review A, 2016, 94, .	1.0	36
71	Light scattering from dense cold atomic media. Physical Review A, 2016, 94, .	1.0	61
72	Doublon dynamics and polar molecule production in an optical lattice. Nature Communications, 2016, 7, 11279.	5.8	42

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73	Realizing exactly solvableSU(N)magnets with thermal atoms. Physical Review A, 2016, 93, .	1.0	19
74	Synthetic-gauge-field stabilization of the chiral-spin-liquid phase. Physical Review A, 2016, 93, .	1.0	21
75	Synthetic Spin-Orbit Coupling in an Optical Lattice Clock. Physical Review Letters, 2016, 116, 035301.	2.9	99
76	Collective atomic scattering and motional effects in a dense coherent medium. Nature Communications, 2016, 7, 11039.	5.8	145
77	Dynamics of Interacting Fermions in Spin-Dependent Potentials. Physical Review Letters, 2016, 117, 195302.	2.9	21
78	Emergent Weyl excitations in systems of polar particles. Nature Communications, 2016, 7, 13543.	5.8	24
79	Quantum spin dynamics and entanglement generation with hundreds of trapped ions. Science, 2016, 352, 1297-1301.	6.0	369
80	Synthetic gauge fields for ultracold atoms. National Science Review, 2016, 3, 166-167.	4.6	1
81	Synchronization of interacting quantum dipoles. New Journal of Physics, 2015, 17, 083063.	1.2	80
82	Effective many-body parameters for atoms in nonseparable Gaussian optical potentials. Physical Review A, 2015, 92, .	1.0	12
83	Demagnetization dynamics of noninteracting trapped fermions. Physical Review A, 2015, 92, .	1.0	12
84	Equilibrium phases of tilted dipolar lattice bosons. New Journal of Physics, 2015, 17, 123014.	1.2	17
85	Quantum Magnetism with Ultracold Molecules. , 2015, , 3-37.		12
86	Many-Body Quantum Spin Dynamics with MonteÂCarlo Trajectories on a Discrete Phase Space. Physical Review X, 2015, 5, .	2.8	115
87	Dynamics of correlations in two-dimensional quantum spin models with long-range interactions: a phase-space Monte-Carlo study. New Journal of Physics, 2015, 17, 065009.	1.2	52
88	Entangling two transportable neutral atoms via local spin exchange. Nature, 2015, 527, 208-211.	13.7	114
89	Quantum correlations and entanglement in far-from-equilibrium spin systems. Physical Review A, 2014, 90, .	1.0	77
90	Many-Body Dynamics of Dipolar Molecules in an Optical Lattice. Physical Review Letters, 2014, 113, 195302.	2.9	162

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91	Ultracold Fermi gases with emergent SU(N) symmetry. Reports on Progress in Physics, 2014, 77, 124401.	8.1	223
92	Spinâ€“orbital dynamics in a system of polar molecules. Nature Communications, 2014, 5, 5391.	5.8	41
93	Beyond the Spin Model Approximation for Ramsey Spectroscopy. Physical Review Letters, 2014, 112, 123001.	2.9	5
94	Suppressing the Loss of Ultracold Molecules Via the Continuous Quantum Zeno Effect. Physical Review Letters, 2014, 112, 070404.	2.9	117
95	Two-particle quantum interference in tunnel-coupled optical tweezers. Science, 2014, 345, 306-309.	6.0	174
96	Spectroscopic observation of SU(N)-symmetric interactions in Sr orbital magnetism. Science, 2014, 345, 1467-1473.	6.0	290
97	Observing the Great Spin and Orbital Swap. Physics Magazine, 2014, 7, .	0.1	0
98	Self-trapping dynamics in a two-dimensional optical lattice. Physical Review A, 2013, 88, .	1.0	5
99	A Quantum Many-Body Spin System in an Optical Lattice Clock. Science, 2013, 341, 632-636.	6.0	152
100	Far-from-Equilibrium Quantum Magnetism with Ultracold Polar Molecules. Physical Review Letters, 2013, 110, 075301.	2.9	90
101	Observation of dipolar spin-exchange interactions with lattice-confined polar molecules. Nature, 2013, 501, 521-525.	13.7	671
102	Self-Trapping in an Array of Coupled 1D Bose Gases. Physical Review Letters, 2013, 110, 033001.	2.9	23
103	Kitaev honeycomb and other exotic spin models with polar molecules. Molecular Physics, 2013, 111, 1908-1916.	0.8	55
104	Topological phases in ultracold polar-molecule quantum magnets. Physical Review B, 2013, 87, .	1.1	94
105	Nonequilibrium dynamics of arbitrary-range Ising models with decoherence: An exact analytic solution. Physical Review A, 2013, 87, .	1.0	68
106	Universality class of quantum criticality in the two-dimensional Hubbard model at intermediate temperatures (t2/Uâ‰ªTâ‰ªt). Physical Review B, 2013, 87, .	1.1	4
107	Evaporative cooling of reactive polar molecules confined in a two-dimensional geometry. Physical Review A, 2013, 88, .	1.0	17
108	Adiabatic Loading of One-Dimensional<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mi>SU</mml:mi><mml:mo stretchy="false">(</mml:mo><mml:mi>N</mml:mi><mml:mo) Tj ETQq0 0 0 rgBT /Overlock 10 Tf 50 57 Td (stretchy="false">)</mml:mo Review Letters, 2012, 109, 205305.	2.9	11

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109	Quantum dynamics of solitons in strongly interacting systems on optical lattices. Physical Review A, 2012, 85, .	1.0	9
110	Steady-State Many-Body Entanglement of Hot Reactive Fermions. Physical Review Letters, 2012, 109, 230501.	2.9	32
111	Operating a ⁸⁷Sr optical lattice clock with high precision and at high density. IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, 2012, 59, 416-425.	1.7	34
112	High-temperature properties of fermionic alkaline-earth-metal atoms in optical lattices. Physical Review A, 2012, 85, .	1.0	47
113	Long-Lived Dipolar Molecules and Feshbach Molecules in a 3D Optical Lattice. Physical Review Letters, 2012, 108, 080405.	2.9	207
114	SU(N)magnetism in chains of ultracold alkaline-earth-metal atoms: Mott transitions and quantum correlations. Physical Review A, 2011, 84, .	1.0	71
115	<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mi>d</mml:mi></mml:math>-wave superfluidity in optical lattices of ultracold polar molecules. Physical Review A, 2011, 84, .	1.0	23
116	Quantum magnetism with polar alkali-metal dimers. Physical Review A, 2011, 84, .	1.0	142
117	Spectroscopy of dipolar fermions in layered two-dimensional and three-dimensional lattices. Physical Review A, 2011, 84, .	1.0	12
118	Tunable Superfluidity and Quantum Magnetism with Ultracold Polar Molecules. Physical Review Letters, 2011, 107, 115301.	2.9	257
119	Suppression of Collisional Shifts in a Strongly Interacting Lattice Clock. Science, 2011, 331, 1043-1046.	6.0	138
120	Supression of collisional frequency shifts in an optical lattice clock. , 2011, , .		0
121	Two-orbital S U(N) magnetism with ultracold alkaline-earth atoms. Nature Physics, 2010, 6, 289-295.	6.5	572
122	Strong correlations in quantum vortex nucleation of ultracold atomic gases. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2010, 466, 1247-1263.	1.0	7
123	Heavy fermions in an optical lattice. Physical Review A, 2010, 82, .	1.0	41
124	Probing the Kondo lattice model with alkaline-earth-metal atoms. Physical Review A, 2010, 81, .	1.0	93
125	Many-Body Treatment of the Collisional Frequency Shift in Fermionic Atoms. Physical Review Letters, 2009, 103, 260402.	2.9	43
126	Mott Insulators of Ultracold Fermionic Alkaline Earth Atoms: Underconstrained Magnetism and Chiral Spin Liquid. Physical Review Letters, 2009, 103, 135301.	2.9	195

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127	Many-body protected entanglement generation in interacting spin systems. Physical Review A, 2008, 77, .	1.0	46
128	Bose-Einstein-condensate superfluidâ€“Mott-insulator transition in an optical lattice. Physical Review A, 2006, 73, .	1.0	14
129	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
130	Ultracold atoms confined in an optical lattice plus parabolic potential: A closed-form approach. Physical Review A, 2005, 72, .	1.0	87
131	Quantum kinetic theory of a Bose-Einstein gas confined in a lattice. Physical Review A, 2005, 72, .	1.0	17
132	Bragg spectroscopy of ultracold atoms loaded in an optical lattice. Physical Review A, 2005, 72, .	1.0	71
133	Nonequilibrium dynamics of optical-lattice-loaded Bose-Einstein-condensate atoms: Beyond the Hartree-Fock-Bogoliubov approximation. Physical Review A, 2004, 69, .	1.0	80
134	Bogoliubov approach to superfluidity of atoms in an optical lattice. Journal of Physics B: Atomic, Molecular and Optical Physics, 2003, 36, 825-841.	0.6	88