

# Simone Montangelo

## List of Publications by Year in descending order

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144  
papers

6,272  
citations

70961

41  
h-index

79541

73  
g-index

149  
all docs

149  
docs citations

149  
times ranked

3755  
citing authors

#	ARTICLE	IF	CITATIONS
1	Entanglement of Formation of Mixed Many-Body Quantum States via Tree Tensor Operators. Physical Review Letters, 2022, 128, 040501.	2.9	3
2	Entanglement in the quantum Game of Life. Physical Review A, 2022, 105, .	1.0	7
3	Loop-free tensor networks for high-energy physics. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2022, 380, 20210065.	1.6	7
4	Information flow and error scaling for fully quantum control. Physical Review Research, 2022, 4, .	1.3	4
5	One decade of quantum optimal control in the chopped random basis. Reports on Progress in Physics, 2022, 85, 076001.	8.1	31
6	Adaptive-weighted tree tensor networks for disordered quantum many-body systems. Physical Review B, 2022, 105, .	1.1	12
7	Robust magnetometry with single nitrogen-vacancy centers via two-step optimization. Physical Review A, 2022, 106, .	1.0	6
8	Error budgeting for a controlled-phase gate with strontium-88 Rydberg atoms. Physical Review Research, 2022, 4, .	1.3	28
9	Two-Particle Interference with Double Twin-Atom Beams. Physical Review Letters, 2021, 126, 083603.	2.9	21
10	Demonstration of Quantum Brachistochrones between Distant States of an Atom. Physical Review X, 2021, 11, .	2.8	33
11	On the descriptive power of Neural-Networks as constrained Tensor Networks with exponentially large bond dimension. SciPost Physics Core, 2021, 4, .	0.9	6
12	Efficient Tensor Network <i>Ansatz</i> for High-Dimensional Quantum Many-Body Problems. Physical Review Letters, 2021, 126, 170603.	2.9	30
13	Dynamical Localization Simulated on Actual Quantum Hardware. Entropy, 2021, 23, 654.	1.1	7
14	Optimizing radiotherapy plans for cancer treatment with Tensor Networks. Physics in Medicine and Biology, 2021, 66, 125015.	1.6	1
15	Lattice quantum electrodynamics in (3+1)-dimensions at finite density with tensor networks. Nature Communications, 2021, 12, 3600.	5.8	41
16	Quantum-inspired machine learning on high-energy physics data. Npj Quantum Information, 2021, 7, .	2.8	14
17	Entangled quantum cellular automata, physical complexity, and Goldilocks rules. Quantum Science and Technology, 2021, 6, 045017.	2.6	22
18	Entanglement generation in $\langle \text{mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"> \langle \text{mml:mrow} \langle \text{mml:mo} \text{stretchy="false"} \rangle \langle \text{mml:mn} \rangle 1 \langle \text{mml:mn} \rangle \langle \text{mml:mo} \rangle + \langle \text{mml:mo} \rangle \langle \text{mml:mn} \rangle 1 \langle \text{mml:mn} \rangle \langle \text{mml:mo} \rangle \text{Tj ETQq0 0 0 rgBT /Over} \text{mathvariant="normal"} \rangle \text{D} \langle \text{mml:mi} \rangle \langle \text{mml:mrow} \rangle \langle \text{mml:math} \rangle \text{QED scattering processes. Physical Review D, 2021, 104, .}$	1.6	19



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37	Amplification of the parametric dynamical Casimir effect via optimal control. <i>Physical Review A</i> , 2017, 96, .	1.0	12
38	Optimal control of Rydberg lattice gases. <i>Quantum Science and Technology</i> , 2017, 2, 035006.	2.6	17
39	Density of states of many-body quantum systems from tensor networks. <i>Physical Review B</i> , 2017, 96, .	1.1	8
40	Engineering and manipulating exciton wave packets. <i>Physical Review B</i> , 2017, 95, .	1.1	11
41	Fractional quantum Hall effect in the interacting Hofstadter model via tensor networks. <i>Physical Review B</i> , 2017, 96, .	1.1	43
42	Dissipation in adiabatic quantum computers: lessons from an exactly solvable model. <i>New Journal of Physics</i> , 2017, 19, 113029.	1.2	45
43	Autonomous calibration of single spin qubit operations. <i>Npj Quantum Information</i> , 2017, 3, .	2.8	26
44	Finite-representation approximation of lattice gauge theories at the continuum limit with tensor networks. <i>Physical Review D</i> , 2017, 95, .	1.6	54
45	Violation of Bell inequalities in larger Hilbert spaces: robustness and challenges. <i>New Journal of Physics</i> , 2016, 18, 013021.	1.2	10
46	Superfluid density and quasi-long-range order in the one-dimensional disordered Bose-Hubbard model. <i>New Journal of Physics</i> , 2016, 18, 015015.	1.2	28
47	Optimal control of complex atomic quantum systems. <i>Scientific Reports</i> , 2016, 6, 34187.	1.6	105
48	Optimal control for Rydberg quantum technology building blocks. <i>Applied Physics B: Lasers and Optics</i> , 2016, 122, 1.	1.1	3
49	Optimal preparation of quantum states on an atom-chip device. <i>Physical Review A</i> , 2016, 93, .	1.0	19
50	Noise-resistant optimal spin squeezing via quantum control. <i>Physical Review A</i> , 2016, 93, .	1.0	28
51	Local shortcut to adiabaticity for quantum many-body systems. <i>Physical Review A</i> , 2016, 93, .	1.0	20
52	Crossover from Classical to Quantum Kibble-Zurek Scaling. <i>Physical Review Letters</i> , 2016, 116, 225701.	2.9	30
53	Positive Tensor Network Approach for Simulating Open Quantum Many-Body Systems. <i>Physical Review Letters</i> , 2016, 116, 237201.	2.9	95
54	Real-Time Dynamics in U(1) Lattice Gauge Theories with Tensor Networks. <i>Physical Review X</i> , 2016, 6, .	2.8	106

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55	Lattice gauge theory simulations in the quantum information era. Contemporary Physics, 2016, 57, 388-412.	0.8	156
56	MCTDHB Physics and Technologies: Excitations and Vorticity, Single-Shot Detection, Measurement of Fragmentation, and Optimal Control in Correlated Ultra-Cold Bosonic Many-Body Systems. , 2016, , 23-49.		5
57	Optimizing for an arbitrary perfect entangler. II. Application. Physical Review A, 2015, 91, .	1.0	36
58	Quantum optimal control within the rotating-wave approximation. Physical Review A, 2015, 92, .	1.0	2
59	Phonon-to-spin mapping in a system of a trapped ion via optimal control. Physical Review A, 2015, 92, .	1.0	5
60	Quantum speed limit and optimal control of many-boson dynamics. Physical Review A, 2015, 92, .	1.0	38
61	Synthetic helical liquids with ultracold atoms in optical lattices. Physical Review B, 2015, 92, .	1.1	10
62	Dressing the chopped-random-basis optimization: A bandwidth-limited access to the trap-free landscape. Physical Review A, 2015, 92, .	1.0	83
63	Quantum state reconstruction on atom-chips. New Journal of Physics, 2015, 17, 093024.	1.2	9
64	Efficiency of quantum controlled non-Markovian thermalization. New Journal of Physics, 2015, 17, 063031.	1.2	32
65	Transitionless quantum driving in open quantum systems. New Journal of Physics, 2014, 16, 053017.	1.2	54
66	Realistic and verifiable coherent control of excitonic states in a light-harvesting complex. New Journal of Physics, 2014, 16, 045007.	1.2	35
67	Controlling the transport of an ion: classical and quantum mechanical solutions. New Journal of Physics, 2014, 16, 075007.	1.2	42
68	Optimal driving of Bose-Einstein condensates in optical cavities. , 2014, , .		0
69	$\langle i \rangle$ Ab initio $\langle /i \rangle$ characterization of the quantum linear-zigzag transition using density matrix renormalization group calculations. Physical Review B, 2014, 89, .	1.1	13
70	Unconstrained tree tensor network: An adaptive gauge picture for enhanced performance. Physical Review B, 2014, 90, .	1.1	48
71	Tensor Networks for Lattice Gauge Theories and Atomic Quantum Simulation. Physical Review Letters, 2014, 112, .	2.9	116
72	Precise qubit control beyond the rotating wave approximation. New Journal of Physics, 2014, 16, 093022.	1.2	64

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73	Lattice gauge tensor networks. <i>New Journal of Physics</i> , 2014, 16, 103015.	1.2	61
74	Probing models of information spreading in social networks. <i>Journal of Physics A: Mathematical and Theoretical</i> , 2014, 47, 435102.	0.7	2
75	Complexity of controlling quantum many-body dynamics. <i>Physical Review A</i> , 2014, 89, .	1.0	28
76	Interferometry with non-classical motional states of a Bose-Einstein condensate. <i>Nature Communications</i> , 2014, 5, 4009.	5.8	80
77	Implementation of an experimentally feasible controlled-phase gate on two blockaded Rydberg atoms. <i>Physical Review A</i> , 2014, 89, .	1.0	69
78	A quantum optical valve in a nonlinear-linear resonators junction. <i>Europhysics Letters</i> , 2014, 106, 54003.	0.7	36
79	Information Theoretical Analysis of Quantum Optimal Control. <i>Physical Review Letters</i> , 2014, 113, 010502.	2.9	81
80	From classical to quantum criticality. <i>Physical Review B</i> , 2014, 89, .	1.1	16
81	Full characterization of the quantum linear-zigzag transition in atomic chains. <i>Annalen Der Physik</i> , 2013, 525, 827-832.	0.9	19
82	Speeding up and slowing down the relaxation of a qubit by optimal control. <i>Physical Review A</i> , 2013, 88, .	1.0	75
83	Room-temperature Rydberg single-photon source. <i>Physical Review A</i> , 2013, 87, .	1.0	40
84	Fast closed-loop optimal control of ultracold atoms in an optical lattice. <i>Physical Review A</i> , 2013, 88, .	1.0	51
85	Universal aspects in the behavior of the entanglement spectrum in one dimension: Scaling transition at the factorization point and ordered entangled structures. <i>Physical Review B</i> , 2013, 88, .	1.1	36
86	Entanglement-storage units. <i>New Journal of Physics</i> , 2012, 14, 093041.	1.2	21
87	Coherent optimal control of photosynthetic molecules. <i>Physical Review A</i> , 2012, 85, .	1.0	44
88	Quantum Game of Life. <i>Europhysics Letters</i> , 2012, 97, 20012.	0.7	19
89	Optimal Control Technique for Many-Body Quantum Dynamics. <i>Physical Review Letters</i> , 2011, 106, 190501.	2.9	300
90	Chopped random-basis quantum optimization. <i>Physical Review A</i> , 2011, 84, .	1.0	243

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91	Speeding up critical system dynamics through optimized evolution. <i>Physical Review A</i> , 2011, 84, .	1.0	60
92	Spin-chain-based full quantum computation by accessing only two spins. , 2011, , .		0
93	Communication at the quantum speed limit along a spin chain. <i>Physical Review A</i> , 2010, 82, .	1.0	86
94	Homogeneous binary trees as ground states of quantum critical Hamiltonians. <i>Physical Review A</i> , 2010, 81, .	1.0	40
95	Homogeneous multiscale entanglement renormalization ansatz tensor networks for quantum critical systems. <i>New Journal of Physics</i> , 2010, 12, 075018.	1.2	6
96	Scalable quantum computation via local control of only two qubits. <i>Physical Review A</i> , 2010, 81, .	1.0	80
97	Critical exponents with a multiscale entanglement renormalization Ansatz channel. <i>Physical Review B</i> , 2009, 80, .	1.1	22
98	Homogeneous multiscale-entanglement-renormalization-ansatz states: An information theoretical analysis. <i>Physical Review A</i> , 2009, 79, .	1.0	19
99	Trap-modulation spectroscopy of the Mott-insulator transition in optical lattices. <i>Physical Review A</i> , 2009, 79, .	1.0	15
100	Dipole oscillations of confined lattice bosons in one dimension. <i>Physical Review A</i> , 2009, 79, .	1.0	20
101	Valence-bond states: Link models. <i>Annals of Physics</i> , 2009, 324, 1875-1896.	1.0	1
102	Optimized single-qubit gates for Josephson phase qubits. <i>Physical Review B</i> , 2009, 79, .	1.1	32
103	Optimal Control at the Quantum Speed Limit. <i>Physical Review Letters</i> , 2009, 103, 240501.	2.9	372
104	Quantum billiards in optical lattices. <i>Europhysics Letters</i> , 2009, 88, 30006.	0.7	12
105	Quantum Multiscale Entanglement Renormalization Ansatz Channels. <i>Physical Review Letters</i> , 2008, 101, 180503.	2.9	74
106	Spin chain model for correlated quantum channels. <i>New Journal of Physics</i> , 2008, 10, 115009.	1.2	9
107	Optimal control of atom transport for quantum gates in optical lattices. <i>Physical Review A</i> , 2008, 77, .	1.0	56
108	Optimized Cooper pair pumps. <i>Physical Review B</i> , 2008, 77, .	1.1	5

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109	Adiabatic quenches through an extended quantum critical region. <i>Physical Review B</i> , 2008, 77, .	1.1	54
110	Simulation of time evolution with multiscale entanglement renormalization ansatz. <i>Physical Review A</i> , 2008, 77, .	1.0	38
111	Decoherence by engineered quantum baths. <i>Journal of Physics A: Mathematical and Theoretical</i> , 2007, 40, 8033-8040.	0.7	35
112	Fractal fidelity as a signature of quantum chaos. <i>Physical Review A</i> , 2007, 76, .	1.0	9
113	Transport properties of a periodically driven superconducting single-electron transistor. <i>Physical Review B</i> , 2007, 75, .	1.1	0
114	Increasing entanglement through engineered disorder in the random Ising chain. <i>Physical Review B</i> , 2007, 76, .	1.1	26
115	Robust Optimal Quantum Gates for Josephson Charge Qubits. <i>Physical Review Letters</i> , 2007, 99, 170501.	2.9	109
116	Decoherence induced by interacting quantum spin baths. <i>Physical Review A</i> , 2007, 75, .	1.0	182
117	Anti-ferromagnetic spinor BECs in optical lattices. <i>Journal of Physics B: Atomic, Molecular and Optical Physics</i> , 2006, 39, S163-S175.	0.6	5
118	IMPLEMENTATION OF QUANTUM COMMUNICATION PROTOCOLS IN JOSEPHSON JUNCTION ARRAYS. <i>International Journal of Quantum Information</i> , 2006, 04, 519-529.	0.6	1
119	EFFECTS OF NOISE ON SPIN NETWORK CLONING. <i>International Journal of Quantum Information</i> , 2006, 04, 487-493.	0.6	0
120	Entanglement production in chaotic quantum dots subject to spin-orbit coupling. <i>Physical Review B</i> , 2006, 74, .	1.1	11
121	Enhancement of Pairwise Entanglement via Z2 Symmetry Breaking. <i>Physical Review Letters</i> , 2006, 97, 257201.	2.9	32
122	Multipartite entanglement generation and fidelity decay in disordered qubit systems. <i>Physical Review A</i> , 2006, 73, .	1.0	17
123	Entanglement entropy dynamics of Heisenberg chains. <i>Journal of Statistical Mechanics: Theory and Experiment</i> , 2006, 2006, P03001-P03001.	0.9	224
124	Chaotic dynamics in superconducting nanocircuits. <i>Europhysics Letters</i> , 2005, 71, 893-899.	0.7	15
125	Dynamical imperfections in quantum computers. <i>Physical Review A</i> , 2005, 71, .	1.0	11
126	Phase Diagram of Spin-1 Bosons on One-Dimensional Lattices. <i>Physical Review Letters</i> , 2005, 95, 240404.	2.9	101



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127	Cloning transformations in spin networks without external control. <i>Physical Review A</i> , 2005, 72, .	1.0	25
128	From perfect to fractal transmission in spin chains. <i>Physical Review A</i> , 2005, 72, .	1.0	94
129	Quantum Computing and Information Extraction for Dynamical Quantum Systems. , 2005, , 273-293.		0
130	Quantum cloning in spin networks. <i>Physical Review A</i> , 2004, 70, .	1.0	60
131	Dynamically localized systems: Exponential sensitivity of entanglement and efficient quantum simulations. <i>Physical Review A</i> , 2004, 70, .	1.0	8
132	Quantum Computing and Information Extraction for Dynamical Quantum Systems. <i>Quantum Information Processing</i> , 2004, 3, 273-293.	1.0	5
133	A study of complexity in Gamma Ray Burst using the Diffusion Entropy approach. <i>Astronomy and Astrophysics</i> , 2004, 414, 1177-1184.	2.1	1
134	Statistical properties of eigenvalues for an operating quantum computer with static imperfections. <i>European Physical Journal D</i> , 2003, 22, 285-293.	0.6	8
135	Dynamical localization simulated on a few-qubit quantum computer. <i>Physical Review A</i> , 2003, 67, .	1.0	30
136	Dynamics of Entanglement in Quantum Computers with Imperfections. <i>Physical Review Letters</i> , 2003, 91, 187901.	2.9	37
137	Stability of Quantum Computing in the Presence of Imperfections. <i>International Journal of Modern Physics B</i> , 2003, 17, 3932-3946.	1.0	4
138	Eigenstates of an operating quantum computer: hypersensitivity to static imperfections. <i>European Physical Journal D</i> , 2002, 20, 293-296.	0.6	17
139	Efficient Quantum Computing of Complex Dynamics. <i>Physical Review Letters</i> , 2001, 87, 227901.	2.9	73
140	The complexity of the logistic map at the chaos threshold. <i>Physics Letters, Section A: General, Atomic and Solid State Physics</i> , 2001, 285, 81-87.	0.9	10
141	Non-extensive thermodynamics and stationary processes of localization. <i>Chaos, Solitons and Fractals</i> , 2000, 11, 2361-2369.	2.5	3
142	Hilbert curve vs Hilbert space: exploiting fractal 2D covering to increase tensor network efficiency. <i>Quantum - the Open Journal for Quantum Science</i> , 0, 5, 556.	0.0	7
143	The Tensor Networks Anthology: Simulation techniques for many-body quantum lattice systems. <i>SciPost Physics Lecture Notes</i> , 0, , .	0.0	66
144	Finite-density phase diagram of a $(1+1)d$ non-abelian lattice gauge theory with tensor networks. <i>Quantum - the Open Journal for Quantum Science</i> , 0, 1, 9.	0.0	44