Simon C Benjamin

List of Publications by Year
in descending order

104 papers	8,389 citations	66234 42 h-index	49773 87 g-index
104 all docs	104 docs citations	104 times ranked	4856 citing authors

#	Article	IF	Citations
1	Variational quantum algorithms. Nature Reviews Physics, 2021, 3, 625-644.	11.9	930
2	Quantum computational chemistry. Reviews of Modern Physics, 2020, 92, .	16.4	726
3	Efficient Variational Quantum Simulator Incorporating Active Error Minimization. Physical Review X, 2017, 7, .	2.8	409
4	Practical Quantum Error Mitigation for Near-Future Applications. Physical Review X, 2018, 8, .	2.8	317
5	Variational ansatz-based quantum simulation of imaginary time evolution. Npj Quantum Information, 2019, 5, .	2.8	285
6	Entanglement distillation between solid-state quantum network nodes. Science, 2017, 356, 928-932.	6.0	277
7	Hybrid Quantum-Classical Algorithms and Quantum Error Mitigation. Journal of the Physical Society of Japan, 2021, 90, 032001.	0.7	263
8	Sustained Quantum Coherence and Entanglement in the Avian Compass. Physical Review Letters, 2011, 106, 040503.	2.9	255
9	Theory of variational quantum simulation. Quantum - the Open Journal for Quantum Science, 0, 3, 191.	0.0	245
10	Cellular automata models of traffic flow along a highway containing a junction. Journal of Physics A, 1996, 29, 3119-3127.	1.6	231
11	Multiplayer quantum games. Physical Review A, 2001, 64, .	1.0	231
12	Magnetic Field Sensing Beyond the Standard Quantum Limit Using 10-Spin NOON States. Science, 2009, 324, 1166-1168.	6.0	214
13	Bangâ€“bang control of fullerene qubits using ultrafast phase gates. Nature Physics, 2006, 2, 40-43.	6.5	174
14	Violation of a Leggettâ€“Garg inequality with ideal non-invasive measurements. Nature Communications, 2012, 3, 606.	5.8	172
15	Variational quantum algorithms for discovering Hamiltonian spectra. Physical Review A, 2019, 99, .	1.0	164
16	Quantum Computing with an Always-On Heisenberg Interaction. Physical Review Letters, 2003, 90, 247901.	2.9	161
17	Magnetic field sensing beyond the standard quantum limit under the effect of decoherence. Physical Review A, 2011, 84, .	1.0	157
18	Topological quantum computing with a very noisy network and local error rates approaching one percent. Nature Communications, 2013, 4, 1756.	5.8	144

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19	Towards a fullerene-based quantum computer. Journal of Physics Condensed Matter, 2006, 18, S867-S883.	0.7	138
20	Variational Quantum Simulation of General Processes. Physical Review Letters, 2020, 125, 010501.	2.9	137
21	QuEST and High Performance Simulation of Quantum Computers. Scientific Reports, 2019, 9, 10736.	1.6	136
22	Freely Scalable Quantum Technologies Using Cells of 5-to-50 Qubits with Very Lossy and Noisy Photonic Links. Physical Review X, 2014, 4, .	2.8	126
23	Comment on â€œQuantum Games and Quantum Strategies''. Physical Review Letters, 2001, 87, 069801.	2.9	121
24	Brokered graph-state quantum computation. New Journal of Physics, 2006, 8, 141-141.	1.2	109
25	The prospects of quantum computing in computational molecular biology. Wiley Interdisciplinary Reviews: Computational Molecular Science, 2021, 11, e1481.	6.2	108
26	Coherence of spin qubits in silicon. Journal of Physics Condensed Matter, 2006, 18, S783-S794.	0.7	107
27	Prospects for measurementâ€based quantum computing with solid state spins. Laser and Photonics Reviews, 2009, 3, 556-574.	4.4	97
28	Learning-Based Quantum Error Mitigation. PRX Quantum, 2021, 2, .	3.5	82
29	Variational algorithms for linear algebra. Science Bulletin, 2021, 66, 2181-2188.	4.3	72
30	Quantum Computing Without Local Control of Qubit-Qubit Interactions. Physical Review Letters, 2001, 88, 017904.	2.9	68
31	Schemes for parallel quantum computation without local control of qubits. Physical Review A, 2000, 61, .	1.0	60
32	Variational-state quantum metrology. New Journal of Physics, 2020, 22, 083038.	1.2	59
33	Resource Costs for Fault-Tolerant Linear Optical Quantum Computing. Physical Review X, 2015, 5, .	2.8	57
34	A silicon-based surface code quantum computer. Npj Quantum Information, 2016, 2, .	2.8	53
35	Mitigating Realistic Noise in Practical Noisy Intermediate-Scale Quantum Devices. Physical Review Applied, 2021, 15, .	1.5	53
36	Nanoscale solid-state quantum computing. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2003, 361, 1473-1485.	1.6	52

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37	Toward Controlled Spacing in One-Dimensional Molecular Chains:Â Alkyl-Chain-Functionalized Fullerenes in Carbon Nanotubes. Journal of the American Chemical Society, 2007, 129, 8609-8614.	6.6	51
38	Measurement-Based Entanglement under Conditions of Extreme Photon Loss. Physical Review Letters, 2008, 101, 130502.	2.9	51
39	Optical generation of matter qubit graph states. New Journal of Physics, 2005, 7, 194-194.	1.2	50
40	Proposed Spin Amplification for Magnetic Sensors Employing Crystal Defects. Physical Review Letters, 2011, 107, 207210.	2.9	50
41	Quantum computing in arrays coupled by â€œalways-onâ€•interactions. Physical Review A, 2004, 70, .	1.0	46
42	Evolutionary quantum game. Journal of Physics A, 2001, 34, L547-L552.	1.6	44
43	Quantum sensors based on weak-value amplification cannot overcome decoherence. Physical Review A, 2013, 87, .	1.0	43
44	A possible nanometer-scale computing device based on an adding cellular automaton. Applied Physics Letters, 1997, 70, 2321-2323.	1.5	42
45	Fault Tolerant Quantum Computation with Nondeterministic Gates. Physical Review Letters, 2010, 105, 250502.	2.9	41
46	Simple pulses for universal quantum computation with a HeisenbergABABchain. Physical Review A, 2001, 64, .	1.0	40
47	Minimally complex ion traps as modules for quantum communication and computing. New Journal of Physics, 2016, 18, 103028.	1.2	39
48	Quantum metrology with molecular ensembles. Physical Review A, 2010, 82, .	1.0	34
49	Practicality of Spin Chain Wiring in Diamond Quantum Technologies. Physical Review Letters, 2013, 110, 100503.	2.9	34
50	High-fidelity all-optical control of quantum dot spins: Detailed study of the adiabatic approach. Physical Review B, 2008, 77, .	1.1	33
51	Demonstration of Adiabatic Variational Quantum Computing with a Superconducting Quantum Coprocessor. Physical Review Letters, 2020, 125, 180501.	2.9	33
52	A New Type of Radical-Pair-Based Model for Magnetoreception. Biophysical Journal, 2012, 102, 961-968.	0.2	32
53	Stabilizers as a design tool for new forms of the Lechner-Hauke-Zoller annealer. Science Advances, 2016, 2, e1601246.	4.7	31
54	The N@C60 nuclear spin qubit: Bang-bang decoupling and ultrafast phase gates. Physica Status Solidi (B): Basic Research, 2006, 243, 3028-3031.	0.7	30

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55	Comment on â€œEfficient high-fidelity quantum computation using matter qubits and linear opticsâ€• Physical Review A, 2005, 72, .	1.0	29
56	Processor Core Model for Quantum Computing. Physical Review Letters, 2006, 96, 220501.	2.9	28
57	High threshold distributed quantum computing with three-qubit nodes. New Journal of Physics, 2012, 14, 093008.	1.2	28
58	Entangled electronic states in multiple-quantum-dot systems. Physical Review B, 1995, 51, 14733-14736.	1.1	27
59	Comment on â€œA quantum approach to static games of completeÂinformationâ€• Physics Letters, Section A: General, Atomic and Solid State Physics, 2000, 277, 180-182.	0.9	27
60	A Direct Mapping of Max k-SAT and High Order Parity Checks to a Chimera Graph. Scientific Reports, 2016, 6, 37107.	1.6	27
61	QuESTlinkâ€”Mathematica embiggened by a hardware-optimised quantum emulator[*]. Quantum Science and Technology, 2020, 5, 034012.	2.6	27
62	Quantum Information Processing with Delocalized Qubits under Global Control. Physical Review Letters, 2007, 99, 030501.	2.9	26
63	Mitigating coherent noise using Pauli conjugation. Npj Quantum Information, 2020, 6, .	2.8	23
64	Robust quantum compilation and circuit optimisation via energy minimisation. Quantum - the Open Journal for Quantum Science, 0, 6, 628.	0.0	22
65	All-Optical Measurement-Based Quantum-Information Processing in Quantum Dots. Physical Review Letters, 2006, 97, 250504.	2.9	21
66	Robust adiabatic approach to optical spin entangling in coupled quantum dots. New Journal of Physics, 2008, 10, 073016.	1.2	21
67	Long range failure-tolerant entanglement distribution. New Journal of Physics, 2013, 15, 023012.	1.2	21
68	Network architecture for a topological quantum computer in silicon. Quantum Science and Technology, 2019, 4, 025003.	2.6	21
69	Probabilistic Growth of Large Entangled States with Low Error Accumulation. Physical Review Letters, 2010, 104, 050501.	2.9	20
70	Fault-tolerant protection of near-term trapped-ion topological qubits under realistic noise sources. Physical Review A, 2019, 100, .	1.0	20
71	Adaptive strategies for graph-state growth in the presence of monitored errors. Physical Review A, 2007, 75, .	1.0	18
72	QUANTUM CRYPTOGRAPHY: Single Photons. Science, 2000, 290, 2273-2274.	6.0	17

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73	Optical quantum computation with perpetually coupled spins. Physical Review A, 2004, 70, .	1.0	17
74	Entangling Remote Nuclear Spins Linked by a Chromophore. Physical Review Letters, 2010, 104, 200501.	2.9	17
75	Constructing Smaller Pauli Twirling Sets for Arbitrary Error Channels. Scientific Reports, 2019, 9, 11281.	1.6	16
76	Variational Circuit Compiler for Quantum Error Correction. Physical Review Applied, 2021, 15, .	1.5	16
77	Quantum analytic descent. Physical Review Research, 2022, 4, .	1.3	15
78	Multi-qubit gates in arrays coupled by Âalways-onÂ interactions. New Journal of Physics, 2004, 6, 61-61.	1.2	14
79	Comment on â€œQuantum Coherence and Sensitivity of Avian Magnetoreceptionâ€• Physical Review Letters, 2013, 110, 178901.	2.9	14
80	Hierarchical surface code for network quantum computing with modules of arbitrary size. Physical Review A, 2016, 94, .	1.0	13
81	Efficient growth of complex graph states via imperfect path erasure. New Journal of Physics, 2007, 9, 196-196.	1.2	12
82	Quantum dynamics in a tiered non-Markovian environment. New Journal of Physics, 2015, 17, 023063.	1.2	11
83	High-Threshold Code for Modular Hardware With Asymmetric Noise. Physical Review Applied, 2019, 12, .	1.5	11
84	Cellular structures for computation in the quantum regime. Physical Review A, 1999, 60, 4334-4337.	1.0	10
85	One-dimensional quantum computing with a â€˜segmented chainâ€™ is feasible with todayâ€™s gate fidelities. Npj Quantum Information, 2018, 4, .	2.8	10
86	A Silicon Surface Code Architecture Resilient Against Leakage Errors. Quantum - the Open Journal for Quantum Science, 0, 3, 212.	0.0	9
87	Rapid and Robust Spin State Amplification. Physical Review Letters, 2011, 106, 167204.	2.9	8
88	Comment on â€˜A scattering quantum circuit for measuring Bell's time inequality: a nuclear magnetic resonance demonstration using maximally mixed statesâ€™. New Journal of Physics, 2012, 14, 058001.	1.2	7
89	Analytic results for the linear and nonlinear response of atoms in a trap with a model interaction. Physical Review A, 1996, 54, 4309-4314.	1.0	6
90	Investigating the potential for a limited quantum speedup on protein lattice problems. New Journal of Physics, 0, , .	1.2	6

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91	Comment on "Multipartite Entanglement Among Single Spins in Diamond". Science, 2009, 323, 1169-1169.	6.0	5
92	Distributed quantum computation with arbitrarily poor photon detection. Physical Review A, 2010, 82, .	1.0	5
93	Measurement-based quantum computing with a spin ensemble coupled to a stripline cavity. New Journal of Physics, 2012, 14, 013030.	1.2	5
94	An integrity measure to benchmark quantum error correcting memories. New Journal of Physics, 2018, 20, 023009.	1.2	5
95	Manipulation of quantum information in N@C₆₀ using electron and nuclear magnetic resonance. Physica Status Solidi (B): Basic Research, 2007, 244, 3874-3878.	0.7	4
96	Measurement-based approach to entanglement generation in coupled quantum dots. Physical Review B, 2009, 79, .	1.1	4
97	Quantum entanglement distribution using a magnetic field sensor. New Journal of Physics, 2012, 14, 023046.	1.2	4
98	Large spin entangled current from a passive device. New Journal of Physics, 2009, 11, 013018.	1.2	3
99	Exact dynamical response of an N-electron quantum dotsubject to a time-dependent potential. Physical Review B, 1997, 55, R4903-R4906.	1.1	2
100	Entangling unstable optically active matter qubits. Physical Review A, 2011, 83, .	1.0	2
101	Electron correlations and fractional quantum Hall states in a double-layer electron system. Journal of Physics Condensed Matter, 1995, 7, L159-L164.	0.7	1
102	Evolutionary route to computation in self-assembled nanoarrays. , 2008, , .		0
103	Snapshots of diamond spins. Nature Physics, 2011, 7, 929-930.	6.5	0
104	Measurement-driven analog of adiabatic quantum computation for frustration-free Hamiltonians. Physical Review A, 2019, 100, .	1.0	0