Lieven M K Vandersypen

List of Publications by Year
in descending order

124 papers	23,748 citations	22132 59 h-index	21521 114 g-index
127 all docs	127 docs citations	127 times ranked	18132 citing authors

#	Article	IF	Citations
1	Science and technology roadmap for graphene, related two-dimensional crystals, and hybrid systems. Nanoscale, 2015, 7, 4598-4810.	2.8	2,452
2	Spins in few-electron quantum dots. Reviews of Modern Physics, 2007, 79, 1217-1265.	16.4	2,166
3	Gate-induced insulating state in bilayer graphene devices. Nature Materials, 2008, 7, 151-157.	13.3	1,495
4	Single-shot read-out of an individual electron spin in a quantum dot. Nature, 2004, 430, 431-435.	13.7	1,395
5	Experimental realization of Shor's quantum factoring algorithm using nuclear magnetic resonance. Nature, 2001, 414, 883-887.	13.7	1,284
6	Driven coherent oscillations of a single electron spin in a quantum dot. Nature, 2006, 442, 766-771.	13.7	1,207
7	Bipolar supercurrent in graphene. Nature, 2007, 446, 56-59.	13.7	1,095
8	NMR techniques for quantum control and computation. Reviews of Modern Physics, 2005, 76, 1037-1069.	16.4	919
9	DNA Translocation through Graphene Nanopores. Nano Letters, 2010, 10, 3163-3167.	4.5	908
10	Coherent Control of a Single Electron Spin with Electric Fields. Science, 2007, 318, 1430-1433.	6.0	860
11	A programmable two-qubit quantum processor in silicon. Nature, 2018, 555, 633-637.	13.7	534
12	Experimental realization of a quantum algorithm. Nature, 1998, 393, 143-146.	13.7	512
13	Control and Detection of Singlet-Triplet Mixing in a Random Nuclear Field. Science, 2005, 309, 1346-1350.	6.0	490
14	Electrical control of a long-lived spin qubit in a Si/SiGe quantum dot. Nature Nanotechnology, 2014, 9, 666-670.	15.6	394
15	Interfacing spin qubits in quantum dots and donorsâ€"hot, dense, and coherent. Npj Quantum Information, 2017, 3, .	2.8	357
16	Zeeman Energy and Spin Relaxation in a One-Electron Quantum Dot. Physical Review Letters, 2003, 91, 196802.	2.9	331
17	Room-Temperature Gating of Molecular Junctions Using Few-Layer Graphene Nanogap Electrodes. Nano Letters, 2011, 11, 4607-4611.	4.5	310
18	Single-Shot Readout of Electron Spin States in a Quantum Dot Using Spin-Dependent Tunnel Rates. Physical Review Letters, 2005, 94, 196802.	2.9	281

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19	Strong spin-photon coupling in silicon. Science, 2018, 359, 1123-1127.	6.0	278
20	Quantum simulation of a Fermiâ€“Hubbard model using a semiconductor quantum dot array. Nature, 2017, 548, 70-73.	13.7	220
21	Universal quantum logic in hot silicon qubits. Nature, 2020, 580, 355-359.	13.7	199
22	Quantum logic with spin qubits crossing the surface code threshold. Nature, 2022, 601, 343-347.	13.7	199
23	Nuclear spin effects in semiconductor quantum dots. Nature Materials, 2013, 12, 494-504.	13.3	195
24	Ballistic Josephson junctions in edge-contacted graphene. Nature Nanotechnology, 2015, 10, 761-764.	15.6	194
25	High-Kinetic-Inductance Superconducting Nanowire Resonators for Circuit QED in a Magnetic Field. Physical Review Applied, 2016, 5, .	1.5	192
26	Wedging Transfer of Nanostructures. Nano Letters, 2010, 10, 1912-1916.	4.5	190
27	Single-Shot Correlations and Two-Qubit Gate of Solid-State Spins. Science, 2011, 333, 1269-1272.	6.0	183
28	A crossbar network for silicon quantum dot qubits. Science Advances, 2018, 4, eaar3960.	4.7	181
29	Spin Echo of a Single Electron Spin in a Quantum Dot. Physical Review Letters, 2008, 100, 236802.	2.9	179
30	Real-time detection of single-electron tunneling using a quantum point contact. Applied Physics Letters, 2004, 85, 4394.	1.5	150
31	Experimental Realization of an Order-Finding Algorithm with an NMR Quantum Computer. Physical Review Letters, 2000, 85, 5452-5455.	2.9	137
32	CMOS-based cryogenic control of silicon quantum circuits. Nature, 2021, 593, 205-210.	13.7	136
33	Qubits made by advanced semiconductor manufacturing. Nature Electronics, 2022, 5, 184-190.	13.1	129
34	Locking electron spins into magnetic resonance by electronâ€“nuclear feedback. Nature Physics, 2009, 5, 764-768.	6.5	125
35	Long-distance coherent coupling in a quantum dot array. Nature Nanotechnology, 2013, 8, 432-437.	15.6	125
36	Gate fidelity and coherence of an electron spin in an Si/SiGe quantum dot with micromagnet. Proceedings of the National Academy of Sciences of the United States of America, 2016, 113, 11738-11743.	3.3	119

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37	Formation and control of wrinkles in graphene by the wedging transfer method. Applied Physics Letters, 2012, 101, .	1.5	116
38	Experimental Signature of Phonon-Mediated Spin Relaxation in a Two-Electron Quantum Dot. Physical Review Letters, 2007, 98, 126601.	2.9	112
39	Rapid gate-based spin read-out in silicon using an on-chip resonator. Nature Nanotechnology, 2019, 14, 742-746.	15.6	112
40	Implementation of a three-quantum-bit search algorithm. Applied Physics Letters, 2000, 76, 646-648.	1.5	106
41	Excited-state spectroscopy on a nearly closed quantum dot via charge detection. Applied Physics Letters, 2004, 84, 4617-4619.	1.5	105
42	Single-spin CCD. Nature Nanotechnology, 2016, 11, 330-334.	15.6	97
43	Gate-Defined Confinement in Bilayer Graphene-Hexagonal Boron Nitride Hybrid Devices. Nano Letters, 2012, 12, 4656-4660.	4.5	96
44	Graphene at High Bias: Cracking, Layer by Layer Sublimation, and Fusing. Nano Letters, 2012, 12, 1873-1878.	4.5	95
45	Benchmarking Gate Fidelities in a <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mrow><mml:mi>Si</mml:mi><mml:mo>/</mml:mo><mml:mi>SiGe</mml:mi></mml:mrow></mml:math> Two-Qubit Device. Physical Review X, 2019, 9, .	2.8	85
46	Universal Phase Shift and Nonexponential Decay of Driven Single-Spin Oscillations. Physical Review Letters, 2007, 99, 106803.	2.9	84
47	Gate-defined graphene double quantum dot and excited state spectroscopy. Nano Letters, 2010, 10, 1623-1627.	4.5	82
48	Quantum dot arrays in silicon and germanium. Applied Physics Letters, 2020, 116, .	1.5	82
49	Spin Lifetime and Charge Noise in Hot Silicon Quantum Dot Qubits. Physical Review Letters, 2018, 121, 076801.	2.9	80
50	Quantum computing with semiconductor spins. Physics Today, 2019, 72, 38-45.	0.3	80
51	Efficient controlled-phase gate for single-spin qubits in quantum dots. Physical Review B, 2011, 83, .	1.1	75
52	Loading a quantum-dot based â€œQubyteâ€•register. Npj Quantum Information, 2019, 5, .	2.8	74
53	<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mi>I</mml:mi><mml:mi>n</mml:mi><mml:mi>S</mml:mi><mml:mi>i</mml:mi><mml:mi>t</mml:mi><mml:m of Charge Noise in<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mi>GaAs</mml:mi><mml:mo>/</mml:mo><mml:msub><mml:mi>Al</mml:mi><mml:mi>x</mml:mi></mml:msub Physical Review Letters, 2008, 101, 226603.	2.9	73
54	Quantum-coherent nanoscience. Nature Nanotechnology, 2021, 16, 1318-1329.	15.6	73

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55	Quantum Dots at Room Temperature Carved out from Few-Layer Graphene. Nano Letters, 2012, 12, 6096-6100.	4.5	72
56	Nagaoka ferromagnetism observed in a quantum dot plaquette. Nature, 2020, 579, 528-533.	13.7	72
57	A Scalable Cryo-CMOS Controller for the Wideband Frequency-Multiplexed Control of Spin Qubits and Transmons. IEEE Journal of Solid-State Circuits, 2020, 55, 2930-2946.	3.5	65
58	Cryogenic amplifier for fast real-time detection of single-electron tunneling. Applied Physics Letters, 2007, 91, .	1.5	64
59	Current-Phase Relation of Ballistic Graphene Josephson Junctions. Nano Letters, 2017, 17, 3396-3401.	4.5	64
60	Impact of Classical Control Electronics on Qubit Fidelity. Physical Review Applied, 2019, 12, .	1.5	55
61	Quantum Dot Systems: a versatile platform for quantum simulations. Annalen Der Physik, 2013, 525, 808-826.	0.9	54
62	A 2â€‰Ã—â€‰2 quantum dot array with controllable inter-dot tunnel couplings. Applied Physics Letters, 2018, 112, .	1.5	54
63	Nuclear magnetic resonance quantum computing using liquid crystal solvents. Applied Physics Letters, 1999, 75, 3563-3565.	1.5	53
64	Generating Entanglement and Squeezed States of Nuclear Spins in Quantum Dots. Physical Review Letters, 2011, 107, 206806.	2.9	53
65	Measurement Efficiency andn-Shot Readout of Spin Qubits. Physical Review Letters, 2004, 93, 106804.	2.9	52
66	Rentâ€™s rule and extensibility in quantum computing. Microprocessors and Microsystems, 2019, 67, 1-7.	1.8	52
67	Valley dependent anisotropic spin splitting in silicon quantum dots. Npj Quantum Information, 2018, 4, .	2.8	49
68	Automated tuning of inter-dot tunnel coupling in double quantum dots. Applied Physics Letters, 2018, 113, .	1.5	48
69	Realization of Logically Labeled Effective Pure States for Bulk Quantum Computation. Physical Review Letters, 1999, 83, 3085-3088.	2.9	47
70	A new class of efficient randomized benchmarking protocols. Npj Quantum Information, 2019, 5, .	2.8	47
71	19.1 A Scalable Cryo-CMOS 2-to-20GHz Digitally Intensive Controller for 4Ã—32 Frequency Multiplexed Spin Qubits/Transmons in 22nm FinFET Technology for Quantum Computers. , 2020, , .		47
72	Coupling artificial molecular spin states by photon-assisted tunnelling. Nature Communications, 2011, 2, 556.	5.8	45

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73	Zero-bias conductance peak and Josephson effect in graphene-NbTiN junctions. Physical Review B, 2012, 85, .	1.1	45
74	Nondestructive measurement of electron spins in a quantum dot. Physical Review B, 2006, 74, .	1.1	41
75	Experimental realization of a two-bit phase damping quantum code. Physical Review A, 1999, 60, 1924-1943.	1.0	40
76	Spin-Relaxation Anisotropy in a GaAs Quantum Dot. Physical Review Letters, 2014, 113, 256802.	2.9	40
77	Nanoscale Electrostatic Control of Oxide Interfaces. Nano Letters, 2015, 15, 2627-2632.	4.5	40
78	Computer-automated tuning of semiconductor double quantum dots into the single-electron regime. Applied Physics Letters, 2016, 108, .	1.5	40
79	Coherent Spin-Spin Coupling Mediated by Virtual Microwave Photons. Physical Review X, 2022, 12, .	2.8	38
80	Side Gate Tunable Josephson Junctions at the LaAlO₃/SrTiO₃ Interface. Nano Letters, 2017, 17, 715-720.	4.5	36
81	Quantum Transport Properties of Industrial <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline" overflow="scroll"><mml:mmultiscripts><mml:mi>Si</mml:mi><mml:mprescripts /><mml:none /><mml:mn>28</mml:mn></mml:mmultiscripts><mml:mo>/</mml:mo><mml:mmultiscripts><mml:mrow><mml:msub><mml:mrow><m mathvariant="normal">O</mml:mi></mml:mrow><mml:mn>2</mml:mn></mml:msub></mml:mrow><mml:mprescripts /><mml:none /><mml:mn>28</mml:mn></mml:mmultiscripts></mml:math>. Physical Review Applied, 2019,	1.5	36
82	Simultaneous Spin-Charge Relaxation in Double Quantum Dots. Physical Review Letters, 2013, 110, 196803.	2.9	35
83	NMR implementation of a building block for scalable quantum computation. Chemical Physics Letters, 2001, 338, 337-344.	1.2	33
84	Quantum interference in an interfacial superconductor. Nature Nanotechnology, 2016, 11, 861-865.	15.6	33
85	Lattice Expansion in Seamless Bilayer Graphene Constrictions at High Bias. Nano Letters, 2012, 12, 4455-4459.	4.5	32
86	Low percolation density and charge noise with holes in germanium. Materials for Quantum Technology, 2021, 1, 011002.	1.2	31
87	Resolving Spin-Orbit- and Hyperfine-Mediated Electric Dipole Spin Resonance in a Quantum Dot. Physical Review Letters, 2013, 110, 107601.	2.9	30
88	Second-Harmonic Coherent Driving of a Spin Qubit in a Si/SiGe Quantum Dot. Physical Review Letters, 2015, 115, 106802.	2.9	30
89	Spin filling of a quantum dot derived from excited-state spectroscopy. New Journal of Physics, 2005, 7, 182-182.	1.2	27
90	The critical role of substrate disorder in valley splitting in Si quantum wells. Applied Physics Letters, 2018, 112, .	1.5	27

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91	Tunable Coupling and Isolation of Single Electrons in Silicon Metal-Oxide-Semiconductor Quantum Dots. Nano Letters, 2019, 19, 8653-8657.	4.5	25
92	Dressed photon-orbital states in a quantum dot: Intervalley spin resonance. Physical Review B, 2017, 95, .	1.1	23
93	Efficient Orthogonal Control of Tunnel Couplings in a Quantum Dot Array. Physical Review Applied, 2020, 13, .	1.5	21
94	Qubit Device Integration Using Advanced Semiconductor Manufacturing Process Technology. , 2018, , .		20
95	Spatial noise correlations in a Si/SiGe two-qubit device from Bell state coherences. Physical Review B, 2020, 101, .	1.1	20
96	Steady-State Entanglement in the Nuclear Spin Dynamics of a Double Quantum Dot. Physical Review Letters, 2013, 111, 246802.	2.9	19
97	On-Chip Microwave Filters for High-Impedance Resonators with Gate-Defined Quantum Dots. Physical Review Applied, 2020, 14, .	1.5	19
98	13.3 A 6-to-8GHz 0.17mW/Qubit Cryo-CMOS Receiver for Multiple Spin Qubit Readout in 40nm CMOS Technology. , 2021, , .		19
99	Repetitive Quantum Nondemolition Measurement and Soft Decoding of a Silicon Spin Qubit. Physical Review X, 2020, 10, .	2.8	18
100	Mesoscopic Elastic Distortions in GaAs Quantum Dot Heterostructures. Nano Letters, 2018, 18, 2780-2786.	4.5	17
101	Photon- and phonon-assisted tunneling in the three-dimensional charge stability diagram of a triple quantum dot array. Applied Physics Letters, 2013, 102, .	1.5	16
102	Publisher's Note: Spins in few-electron quantum dots [Rev. Mod. Phys. 79, 1217 (2007)]. Reviews of Modern Physics, 2007, 79, 1455-1455.	16.4	14
103	Radio-Frequency Reflectometry in Silicon-Based Quantum Dots. Physical Review Applied, 2021, 16, .	1.5	14
104	Quantum Simulation of Antiferromagnetic Heisenberg Chain with Gate-Defined Quantum Dots. Physical Review X, 2021, 11, .	2.8	13
105	<i>Ab initio</i> exact diagonalization simulation of the Nagaoka transition in quantum dots. Physical Review B, 2019, 100, .	1.1	12
106	A sparse spin qubit array with integrated control electronics. , 2019, , .		11
107	Electron cascade for distant spin readout. Nature Communications, 2021, 12, 77.	5.8	11
108	High fidelity measurement of singletâ€“triplet state in a quantum dot. Physica Status Solidi (B): Basic Research, 2006, 243, 3855-3858.	0.7	9

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109	Tunable few-electron double quantum dots with integrated charge read-out. Physica E: Low-Dimensional Systems and Nanostructures, 2004, 25, 135-141.	1.3	8
110	Excitation of a Si/SiGe quantum dot using an on-chip microwave antenna. Applied Physics Letters, 2013, 103, .	1.5	8
111	On-chip integration of Si/SiGe-based quantum dots and switched-capacitor circuits. Applied Physics Letters, 2020, 117, .	1.5	8
112	Cryogenic CMOS for Qubit Control and Readout. , 2022, , .		8
113	Control and measurement of electron spins in semiconductor quantum dots. Physica Status Solidi (B): Basic Research, 2006, 243, 3682-3691.	0.7	7
114	Quantum simulation and optimization in hot quantum networks. Physical Review B, 2019, 99, .	1.1	7
115	Cryo-CMOS Interfaces for Large-Scale Quantum Computers. , 2020, , .		6
116	Electron Beam Induced Deposition on graphene on silicon oxide and hexagonal boron nitride: A comparison of substrates. Microelectronic Engineering, 2014, 121, 122-126.	1.1	4
117	Long-range electron-electron interactions in quantum dot systems and applications in quantum chemistry. Physical Review Research, 2022, 4, .	1.3	4
118	Semiconductor few-electron quantum dots as spin qubits. , 2006, , 298-305.		3
119	Electrode-induced lattice distortions in GaAs multi-quantum-dot arrays. Journal of Materials Research, 2019, 34, 1291-1301.	1.2	2
120	A single spin made visible. Nature Physics, 2007, 3, 83-84.	6.5	1
121	Bouncing spins. Nature, 2009, 458, 841-843.	13.7	0
122	(Invited) Single-Shot Readout of Singlet-Triplet Qubit States in a Si/SiGe Double Quantum Dot. ECS Transactions, 2013, 50, 655-662.	0.3	0
123	A capacitance spectroscopy-based platform for realizing gate-defined electronic lattices. Journal of Applied Physics, 2018, 124, 124305.	1.1	0
124	Embedding Silicon Spin Qubits in Superconducting Circuits. , 2019, , .		0