Dimitrie Culcer

List of Publications by Year
in descending order

78 papers	4,503 citations	126907 33 h-index	98798 67 g-index
79 all docs	79 docs citations	79 times ranked	3782 citing authors

#	ARTICLE	IF	CITATIONS
1	Ultrafast coherent control of a hole spin qubit in a germanium quantum dot. Nature Communications, 2022, 13, 206.	12.8	58
2	Semiclassical response of disordered conductors: Extrinsic carrier velocity and spin and field-corrected collision integral. Physical Review Research, 2022, 4, .	3.6	12
3	Nonlinear antidamping spin-orbit torque originating from intraband transport on the warped surface of a topological insulator. Physical Review B, 2022, 105, .	3.2	3
4	Unidirectional valley-contrasting photocurrent in strained transition metal dichalcogenide monolayers. Physical Review B, 2022, 105, .	3.2	5
5	Engineering long spin coherence times of spinâ€“orbit qubits in silicon. Nature Materials, 2021, 20, 38-42.	27.5	40
6	Anomalous plasmon mode in strained Weyl semimetals. Physical Review B, 2021, 103, .	3.2	2
7	Roadmap on quantum nanotechnologies. Nanotechnology, 2021, 32, 162003.	2.6	45
8	Progress in Epitaxial Thinâ€Film Na₃Bi as a Topological Electronic Material. Advanced Materials, 2021, 33, e2005897.	21.0	18
9	Overcoming Boltzmannâ€™s Tyranny in a Transistor via the Topological Quantum Field Effect. Nano Letters, 2021, 21, 3155-3161.	9.1	36
10	Theory of hole-spin qubits in strained germanium quantum dots. Physical Review B, 2021, 103, .	3.2	50
11	Optimal operation points for ultrafast, highly coherent Ge hole spin-orbit qubits. Npj Quantum Information, 2021, 7, .	6.7	45
12	Gate-Controlled Magnetic Phase Transition in a van der Waals Magnet Fe₅GeTe₂. Nano Letters, 2021, 21, 5599-5605.	9.1	45
13	Generating a Topological Anomalous Hall Effect in a Nonmagnetic Conductor: An In-Plane Magnetic Field as a Direct Probe of the Berry Curvature. Physical Review Letters, 2021, 126, 256601.	7.8	35
14	Unidirectional magnetotransport of linearly dispersing topological edge states. Physical Review B, 2021, 104, .	3.2	1
15	Geometric Control of Universal Hydrodynamic Flow in a Two-Dimensional Electron Fluid. Physical Review X, 2021, 11, .	8.9	29
16	Quasiparticle band-gap renormalization in doped monolayer <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML"><mml:msub><mml:mi>MoS</mml:mi><mml:mn>2</mml:mn></mml:msub></mm Physical Review B, 2021, 104, .	3.2	7
17	Nonlinear Ballistic Response of Quantum Spin Hall Edge States. Physical Review Letters, 2021, 127, 206801.	7.8	11
18	Nonlinear spin filter for nonmagnetic materials at zero magnetic field. Physical Review B, 2020, 102, .	3.2	2

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19	Helical Edge Transport in Millimeter-Scale Thin Films of Na₃Bi. Nano Letters, 2020, 20, 6306-6312.	9.1	13
20	Pseudospin-electric coupling for holes beyond the envelope-function approximation. Physical Review B, 2020, 102, .	3.2	12
21	Phase diagram of the interacting persistent spin-helix state. Physical Review B, 2020, 102, .	3.2	4
22	Signatures of quantum mechanical Zeeman effect in classical transport due to topological properties of two-dimensional spin- 32 holes. Physical Review B, 2020, 101, .	3.2	9
23	Resonant Photovoltaic Effect in Doped Magnetic Semiconductors. Physical Review Letters, 2020, 124, 087402.	7.8	34
24	Transport in two-dimensional topological materials: recent developments in experiment and theory. 2D Materials, 2020, 7, 022007.	4.4	92
25	Hidden anisotropy in the Drude conductivity of charge carriers with Dirac-SchrÃ¶dinger dynamics. Physical Review B, 2019, 100, .	3.2	3
26	Antisymmetric magnetoresistance in van der Waals Fe ₃ GeTe ₂ /graphite/Fe ₃ GeTe ₂ trilayer heterostructures. Science Advances, 2019, 5, eaaw0409.	10.3	119
27	Unconventional Temperature Dependence of the Anomalous Hall Effect in <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mrow><mml:msub><mml:mrow><mml:mi>HgCr</mml:mi></mml:mrow><mml:mrow><mml:mn>2</mml:mn> Physical Review Letters, 2019, 123, 096601.	7.8	18
28	Sign Change in the Anomalous Hall Effect and Strong Transport Effects in a 2D Massive Dirac Metal Due to Spin-Charge Correlated Disorder. Physical Review Letters, 2019, 123, 126603.	7.8	15
29	Controlling Spin-Orbit Interactions in Silicon Quantum Dots Using Magnetic Field Direction. Physical Review X, 2019, 9, .	8.9	42
30	Coulomb drag in topological materials. Journal of Physics and Chemistry of Solids, 2019, 128, 54-64.	4.0	2
31	Integrated silicon qubit platform with single-spin addressability, exchange control and single-shot singlet-triplet readout. Nature Communications, 2018, 9, 4370.	12.8	66
32	Entanglement control and magic angles for acceptor qubits in Si. Applied Physics Letters, 2018, 113, .	3.3	11
33	Electrical Control of the Zeeman Spin Splitting in Two-Dimensional Hole Systems. Physical Review Letters, 2018, 121, 077701.	7.8	27
34	Strong Spin-Orbit Contribution to the Hall Coefficient of Two-Dimensional Hole Systems. Physical Review Letters, 2018, 121, 087701.	7.8	27
35	Impact of valley phase and splitting on readout of silicon spin qubits. Physical Review B, 2018, 97, .	3.2	14
36	Spin-orbit interactions in inversion-asymmetric two-dimensional hole systems: A variational analysis. Physical Review B, 2017, 95, .	3.2	60

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37	Spin blockade in hole quantum dots: Tuning exchange electrically and probing Zeeman interactions. Physical Review B, 2017, 95, .	3.2	29
38	Electrically driven spin qubit based on valley mixing. Physical Review B, 2017, 95, .	3.2	34
39	Generalized Stoner criterion and versatile spin ordering in two-dimensional spin-orbit coupled electron systems. Physical Review B, 2017, 96, .	3.2	9
40	Anomalous Hall Coulomb drag of massive Dirac fermions. Physical Review B, 2017, 95, .	3.2	8
41	Interband coherence response to electric fields in crystals: Berry-phase contributions and disorder effects. Physical Review B, 2017, 96, .	3.2	57
42	Valley Phase and Voltage Control of Coherent Manipulation in Si Quantum Dots. Nano Letters, 2017, 17, 4461-4465.	9.1	14
43	Quantum kinetic theory of the chiral anomaly. Physical Review B, 2017, 96, .	3.2	46
44	Weak Localization and Antilocalization in Topological Materials with Impurity Spin-Orbit Interactions. Materials, 2017, 10, 807.	2.9	24
45	Quantum transport in Weyl semimetal thin films in the presence of spin-orbit coupled impurities. Physical Review B, 2017, 96, .	3.2	16
46	Anisotropic Pauli Spin Blockade of Holes in a GaAs Double Quantum Dot. Nano Letters, 2016, 16, 7685-7689.	9.1	47
47	Quantum computing with acceptor spins in silicon. Nanotechnology, 2016, 27, 244001.	2.6	31
48	Charge-Insensitive Single-Atom Spin-Orbit Qubit in Silicon. Physical Review Letters, 2016, 116, 246801.	7.8	44
49	Control of valley dynamics in silicon quantum dots in the presence of an interface step. Physical Review B, 2016, 94, .	3.2	31
50	Coulomb drag in topological insulator films. Physica E: Low-Dimensional Systems and Nanostructures, 2016, 79, 72-79.	2.7	9
51	Conductivity corrections for topological insulators with spin-orbit impurities: Hikami-Larkin-Nagaoka formula revisited. Physical Review B, 2015, 92, .	3.2	27
52	Do micromagnets expose spin qubits to charge and Johnson noise?. Applied Physics Letters, 2015, 107, .	3.3	22
53	Crossover of Magnetoresistance from Fourfold to Twofold Symmetry in SmB₆ Single Crystal, a Topological Kondo Insulator. Journal of the Physical Society of Japan, 2015, 84, 044717.	1.6	16
54	Charge noise, spin-orbit coupling, and dephasing of single-spin qubits. Applied Physics Letters, 2014, 105, .	3.3	43

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55	Screening, Friedel oscillations, and low-temperature conductivity in topological insulator thin films. Physical Review B, 2014, 89, .	3.2	16
56	NV-center-based digital quantum simulation of a quantum phase transition in topological insulators. Physical Review B, 2014, 89, .	3.2	12
57	Quantum phase transitions and topological proximity effects in graphene nanoribbon heterostructures. Nanoscale, 2014, 6, 3259.	5.6	9
58	Electron-electron interactions in nonequilibrium bilayer graphene. Physical Review B, 2013, 87, .	3.2	3
59	Suppression of the Kondo resistivity minimum in topological insulators. Physical Review B, 2013, 88, .	3.2	14
60	Coulomb interaction and valley-orbit coupling in Si quantum dots. Physical Review B, 2013, 88, .	3.2	13
61	Dephasing of Si singlet-triplet qubits due to charge and spin defects. Applied Physics Letters, 2013, 102, .	3.3	26
62	Anomalous spin precession and spin Hall effect in semiconductor quantum wells. Physical Review B, 2013, 88, .	3.2	25
63	Valley-Based Noise-Resistant Quantum Computation Using Si Quantum Dots. Physical Review Letters, 2012, 108, 126804.	7.8	81
64	Transport in three-dimensional topological insulators: Theory and experiment. Physica E: Low-Dimensional Systems and Nanostructures, 2012, 44, 860-884.	2.7	127
65	Linear response theory of interacting topological insulators. Physical Review B, 2011, 84, .	3.2	32
66	Anomalous Hall response of topological insulators. Physical Review B, 2011, 83, .	3.2	42
67	Interface roughness, valley-orbit coupling, and valley manipulation in quantum dots. Physical Review B, 2010, 82, .	3.2	79
68	Exchange coupling in silicon quantum dots: Theoretical considerations for quantum computation. Physical Review B, 2010, 81, .	3.2	77
69	Side jumps in the spin Hall effect: Construction of the Boltzmann collision integral. Physical Review B, 2010, 81, .	3.2	35
70	Two-dimensional surface charge transport in topological insulators. Physical Review B, 2010, 82, .	3.2	162
71	Quantum dot spin qubits in silicon: Multivalley physics. Physical Review B, 2010, 82, .	3.2	69
72	Realizing singlet-triplet qubits in multivalley Si quantum dots. Physical Review B, 2009, 80, .	3.2	55

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73	Dephasing of Si spin qubits due to charge noise. Applied Physics Letters, 2009, 95, .	3.3	96
74	Spin orientation of holes in quantum wells. Semiconductor Science and Technology, 2008, 23, 114017.	2.0	63
75	STEADY-STATE SPIN DENSITIES AND CURRENTS. International Journal of Modern Physics B, 2008, 22, 4765-4791.	2.0	4
76	Generation of Spin Currents and Spin Densities in Systems with Reduced Symmetry. Physical Review Letters, 2007, 99, 226601.	7.8	53
77	Spin Precession and Alternating Spin Polarization in Spin-3/2Hole Systems. Physical Review Letters, 2006, 97, 106601.	7.8	33
78	Universal Intrinsic Spin Hall Effect. Physical Review Letters, 2004, 92, 126603.	7.8	1,858