M S Lundstrom

List of Publications by Year
in descending order

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119 papers	9,095 citations	66234 42 h-index	53109 85 g-index
121 all docs	121 docs citations	121 times ranked	6789 citing authors

#	Article	IF	Citations
1	Elementary scattering theory of the Si MOSFET. IEEE Electron Device Letters, 1997, 18, 361-363.	2.2	530
2	Carbon Nanotube Field-Effect Transistors with Integrated Ohmic Contacts and High-Î¹ Gate Dielectrics. Nano Letters, 2004, 4, 447-450.	4.5	498
3	Essential physics of carrier transport in nanoscale MOSFETs. IEEE Transactions on Electron Devices, 2002, 49, 133-141.	1.6	482
4	APPLIED PHYSICS: Enhanced: Moore's Law Forever?. Science, 2003, 299, 210-211.	6.0	418
5	Performance Comparison Between p-i-n Tunneling Transistors and Conventional MOSFETs. IEEE Transactions on Electron Devices, 2009, 56, 456-465.	1.6	374
6	A three-dimensional quantum simulation of silicon nanowire transistors with the effective-mass approximation. Journal of Applied Physics, 2004, 96, 2192-2203.	1.1	328
7	A Numerical Study of Scaling Issues for Schottky-Barrier Carbon Nanotube Transistors. IEEE Transactions on Electron Devices, 2004, 51, 172-177.	1.6	263
8	Modeling of Nanoscale Devices. Proceedings of the IEEE, 2008, 96, 1511-1550.	16.4	255
9	Performance Projections for Ballistic Graphene Nanoribbon Field-Effect Transistors. IEEE Transactions on Electron Devices, 2007, 54, 677-682.	1.6	233
10	On the performance limits for Si MOSFETs: a theoretical study. IEEE Transactions on Electron Devices, 2000, 47, 232-240.	1.6	197
11	Influence of dimensionality on thermoelectric device performance. Journal of Applied Physics, 2009, 105, .	1.1	181
12	Universality of non-Ohmic shunt leakage in thin-film solar cells. Journal of Applied Physics, 2010, 108, .	1.1	180
13	Assessment of High-Frequency Performance Potential of Carbon Nanotube Transistors. IEEE Nanotechnology Magazine, 2005, 4, 715-721.	1.1	169
14	On the Validity of the Parabolic Effective-Mass Approximation for the Iâ€“V Calculation of Silicon Nanowire Transistors. IEEE Transactions on Electron Devices, 2005, 52, 1589-1595.	1.6	168
15	Transport Effects on Signal Propagation in Quantum Wires. IEEE Transactions on Electron Devices, 2005, 52, 1734-1742.	1.6	167
16	Bandstructure Effects in Silicon Nanowire Electron Transport. IEEE Transactions on Electron Devices, 2008, 55, 1286-1297.	1.6	167
17	nanoHUB.org: Advancing Education and Research in Nanotechnology. Computing in Science and Engineering, 2008, 10, 17-23.	1.2	163
18	Compact Models and the Physics of Nanoscale FETs. IEEE Transactions on Electron Devices, 2014, 61, 225-233.	1.6	156

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19	Nonequilibrium Green's Function Treatment of Phonon Scattering in Carbon-Nanotube Transistors. IEEE Transactions on Electron Devices, 2007, 54, 2339-2351.	1.6	154
20	A simple quantum mechanical treatment of scattering in nanoscale transistors. Journal of Applied Physics, 2003, 93, 5613-5625.	1.1	152
21	Theoretical investigation of surface roughness scattering in silicon nanowire transistors. Applied Physics Letters, 2005, 87, 043101.	1.5	134
22	On Landauer versus Boltzmann and full band versus effective mass evaluation of thermoelectric transport coefficients. Journal of Applied Physics, 2010, 107, .	1.1	133
23	Effects of Surface Band Bending and Scattering on Thermoelectric Transport in Suspended Bismuth Telluride Nanoplates. Nano Letters, 2013, 13, 5316-5322.	4.5	129
24	Generalized effective-mass approach for n-type metal-oxide-semiconductor field-effect transistors on arbitrarily oriented wafers. Journal of Applied Physics, 2005, 97, 053702.	1.1	128
25	Conductance Asymmetry of Graphene p-n Junction. IEEE Transactions on Electron Devices, 2009, 56, 1292-1299.	1.6	114
26	Design of GaAs Solar Cells Operating Close to the Shockleyâ€“Queisser Limit. IEEE Journal of Photovoltaics, 2013, 3, 737-744.	1.5	106
27	Does source-to-drain tunneling limit the ultimate scaling of MOSFETs?. , 0, , .		101
28	Ballistic transport in high electron mobility transistors. IEEE Transactions on Electron Devices, 2003, 50, 1604-1609.	1.6	96
29	Role of phonon scattering in carbon nanotube field-effect transistors. Applied Physics Letters, 2005, 86, 193103.	1.5	93
30	Thermoelectric properties of epitaxial ScN films deposited by reactive magnetron sputtering onto MgO(001) substrates. Journal of Applied Physics, 2013, 113, .	1.1	91
31	Full dispersion versus Debye model evaluation of lattice thermal conductivity with a Landauer approach. Journal of Applied Physics, 2011, 109, 073718.	1.1	89
32	A computational study of the thermoelectric performance of ultrathin Bi2Te3 films. Applied Physics Letters, 2013, 102, .	1.5	78
33	Quantum mechanical analysis of channel access geometry and series resistance in nanoscale transistors. Journal of Applied Physics, 2004, 95, 292-305.	1.1	69
34	Electrostatics of nanowire transistors. IEEE Nanotechnology Magazine, 2003, 2, 329-334.	1.1	68
35	Gate-tunable and thickness-dependent electronic and thermoelectric transport in few-layer MoS2. Journal of Applied Physics, 2016, 120, .	1.1	66
36	Thermal transport at the nanoscale: A Fourier's law vs. phonon Boltzmann equation study. Journal of Applied Physics, 2017, 121, .	1.1	64

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37	Steady-state heat transport: Ballistic-to-diffusive with Fourier's law. Journal of Applied Physics, 2015, 117, .	1.1	63
38	Band-Structure Effects on the Performance of IIIâ€“V Ultrathin-Body SOI MOSFETs. IEEE Transactions on Electron Devices, 2008, 55, 1116-1122.	1.6	57
39	Drift-diffusion equation for ballistic transport in nanoscale metal-oxide-semiconductor field effect transistors. Journal of Applied Physics, 2002, 92, 5196-5202.	1.1	52
40	Unification of nonequilibrium molecular dynamics and the mode-resolved phonon Boltzmann equation for thermal transport simulations. Physical Review B, 2020, 101, .	1.1	49
41	Performance evaluation of ballistic silicon nanowire transistors with atomic-basis dispersion relations. Applied Physics Letters, 2005, 86, 093113.	1.5	47
42	A Tight-Binding Study of the Ballistic Injection Velocity for Ultrathin-Body SOI MOSFETs. IEEE Transactions on Electron Devices, 2008, 55, 866-871.	1.6	47
43	Substrate Gating of Contact Resistance in Graphene Transistors. IEEE Transactions on Electron Devices, 2011, 58, 3925-3932.	1.6	47
44	Assessment of silicon MOS and carbon nanotube FET performance limits using a general theory of ballistic transistors. , 0, , .		41
45	Prospects of Thin-Film Thermoelectric Devices for Hot-Spot Cooling and On-Chip Energy Harvesting. IEEE Transactions on Components, Packaging and Manufacturing Technology, 2013, 3, 2059-2067.	1.4	41
46	Simulations of nanowire transistors: atomistic vs. effective mass models. Journal of Computational Electronics, 2008, 7, 363-366.	1.3	40
47	Thermoelectric band engineering: The role of carrier scattering. Journal of Applied Physics, 2017, 122, .	1.1	39
48	On the calculation of Lorenz numbers for complex thermoelectric materials. Journal of Applied Physics, 2018, 123, .	1.1	38
49	The importance of band tail recombination on current collection and open-circuit voltage in CZTSSe solar cells. Applied Physics Letters, 2016, 109, 021102.	1.5	37
50	Characteristic Features of 1-D Ballistic Transport in Nanowire MOSFETs. IEEE Nanotechnology Magazine, 2008, 7, 787-794.	1.1	36
51	A simple Boltzmann transport equation for ballistic to diffusive transient heat transport. Journal of Applied Physics, 2015, 117, .	1.1	35
52	On the Interpretation of Ballistic Injection Velocity in Deeply Scaled MOSFETs. IEEE Transactions on Electron Devices, 2012, 59, 994-1001.	1.6	34
53	Simulation of Carbon Nanotube FETs Including Hot-Phonon and Self-Heating Effects. IEEE Transactions on Electron Devices, 2007, 54, 2352-2361.	1.6	33
54	CARBON NANOTUBE FIELD-EFFECT TRANSISTORS. International Journal of High Speed Electronics and Systems, 2006, 16, 897-912.	0.3	32

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55	Full band calculations of the intrinsic lower limit of contact resistivity. Applied Physics Letters, 2013, 102, .	1.5	31
56	A Landauer Approach to Nanoscale MOSFETs. Journal of Computational Electronics, 2002, 1, 481-489.	1.3	29
57	Universal behavior of the thermoelectric figure of merit, zT, vs. quality factor. Materials Today Physics, 2019, 8, 43-48.	2.9	29
58	Bandstructure and orientation effects in ballistic si and ge nanowire FETs. , 0, , .		26
59	Atomistic Simulation of Carbon Nanotube Field-Effect Transistors Using Non-Equilibrium Greenâ€™s Function Formalism. Journal of Computational Electronics, 2004, 3, 373-377.	1.3	24
60	A General Approach for the Performance Assessment of Nanoscale Silicon FETs. IEEE Transactions on Electron Devices, 2004, 51, 1366-1370.	1.6	22
61	Performance Analysis of III-V Materials in a Double-Gate nano-MOSFET. , 2007, , .		22
62	Computational study of double-gate graphene nano-ribbon transistors. Journal of Computational Electronics, 2008, 7, 394-397.	1.3	22
63	Reflection anisotropy spectroscopy study of the near surface electric field in low-temperature grown GaAs (001). Applied Physics Letters, 1997, 70, 1107-1109.	1.5	19
64	Ballistic Iâ€“ V Characteristics of Short-Channel Graphene Field-Effect Transistors: Analysis and Optimization for Analog and RF Applications. IEEE Transactions on Electron Devices, 2013, 60, 958-964.	1.6	19
65	A physics-based compact model for FETs from diffusive to ballistic carrier transport regimes. , 2014, , .		18
66	Emissionâ€“Diffusion Theory of the MOSFET. IEEE Transactions on Electron Devices, 2015, 62, 4174-4178.	1.6	17
67	Role of energy distribution in contacts on thermal transport in Si: A molecular dynamics study. Journal of Applied Physics, 2016, 120, .	1.1	17
68	Modeling ballistic effects in frequency-dependent transient thermal transport using diffusion equations. Journal of Applied Physics, 2016, 119, .	1.1	17
69	Inversion capacitance-voltage studies on GaAs metal-oxide-semiconductor structure using transparent conducting oxide as metal gate. Applied Physics Letters, 2008, 92, .	1.5	15
70	Photoluminescence Excitation Spectroscopy for In-Line Optical Characterization of Crystalline Solar Cells. IEEE Journal of Photovoltaics, 2013, 3, 1342-1347.	1.5	15
71	Photovoltaic Material Characterization With Steady State and Transient Photoluminescence. IEEE Journal of Photovoltaics, 2015, 5, 282-287.	1.5	15
72	NEGF analysis of InGaAs Schottky barrier double gate MOSFETs. , 2008, , .		14

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73	On the Use of Rau's Reciprocity to Deduce External Radiative Efficiency in Solar Cells. IEEE Journal of Photovoltaics, 2013, 3, 1348-1353.	1.5	13
74	Thinâ€Film Solar Cells with InP Absorber Layers Directly Grown on Nonepitaxial Metal Substrates. Advanced Energy Materials, 2015, 5, 1501337.	10.2	13
75	Drift-diffusion and computational electronics - still going strong after 40 years!. , 2015, , .		12
76	PETE: A device/circuit analysis framework for evaluation and comparison of charge based emerging devices. , 2009, , .		11
77	Scattering theory of the short channel MOSFET. , 0, , .		10
78	Benchmarking Macroscopic Transport Models for Nanotransistor TCAD. Journal of Computational Electronics, 2002, 1, 385-388.	1.3	9
79	Simulation of spin field effect transistors: Effects of tunneling and spin relaxation on performance. Journal of Applied Physics, 2010, 108, 083702.	1.1	9
80	Monte Carlo Simulation of Carbon Nanotube Devices. Journal of Computational Electronics, 2004, 3, 333-336.	1.3	8
81	Modeling of spin metal-oxide-semiconductor field-effect transistor: A nonequilibrium Greenâ€™s function approach with spin relaxation. Journal of Applied Physics, 2008, 104, 094511.	1.1	8
82	The use of strain to tailor electronic thermoelectric transport properties: A first principles study of 2H-phase CuAlO₂. Journal of Applied Physics, 2019, 125, 082531.	1.1	7
83	Limitations of zT as a figure of merit for nanostructured thermoelectric materials. Journal of Applied Physics, 2019, 126, .	1.1	7
84	An efficient algorithm to calculate intrinsic thermoelectric parameters based on Landauer approach. Journal of Computational Electronics, 2012, 11, 56-66.	1.3	6
85	Three-dimensional atomistic simulation of carbon nanotube FETs with realistic geometry. , 0, , .		5
86	Steady-state photoluminescent excitation characterization of semiconductor carrier recombination. Review of Scientific Instruments, 2016, 87, 013104.	0.6	5
87	A Quantum Mechanical Approach for the Simulation of Si/SiO2 Interface Roughness Scattering in Silicon Nanowire Transistors. Journal of Computational Electronics, 2004, 3, 453-457.	1.3	4
88	Simulation of Carbon nanotube FETs including hot-phonon and self-heating effects. , 2006, , .		4
89	Simulating realistic implementations of spin field effect transistor. Journal of Applied Physics, 2011, 109, 07C306.	1.1	4
90	Electrostatics of nanowire transistors. , 0, , .		3

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91	Choice of flat-rand voltage, V/sub DD/ and diameter of ambipolar Schottky-barrier carbon nanotube transistors in digital circuit design. , 0, , .		3
92	Channel material optimization for the ultimate planar and nanowire mosfets: a theoretical exploration. , 2005, , .		3
93	The ultimate MOSFET and the limits of miniaturization. , 2007, , .		3
94	Subthreshold Characteristics of High-performance Inversion-type Enhancement-mode InGaAs NMOSFETs with ALD A1<inf>2</inf>O<inf>3</inf> as Gate Dielectric. , 2008, , .		3
95	Temperature Dependence of the Transconductance in Ballistic IIIâ€“V QWFETs. IEEE Transactions on Electron Devices, 2011, 58, 1804-1808.	1.6	3
96	Photoluminescence excitation spectroscopy characterization of cadmium telluride solar cells. , 2016, , .		3
97	A Computational Exploration of Lateral Channel Engineering to Enhance MOSFET Performance. Journal of Computational Electronics, 2002, 1, 185-189.	1.3	2
98	Nanoscale Transistors: Physics and Materials. Materials Research Society Symposia Proceedings, 2006, 958, 1.	0.1	2
99	WASTE ENERGY HARVESTING USING III-NITRIDE MATERIALS. , 2017, , 37-75.		2
100	Carrier Transport in BJTs: from Ballistic to Diffusive and Off-Equilibrium. , 2018, , .		2
101	The use of strain and grain boundaries to tailor phonon transport properties: A first-principles study of 2H-phase CuAlO2. II. Journal of Applied Physics, 2020, 127, .	1.1	2
102	Scattering theory: a conceptually simple view of nanoscale transistors. , 1998, , .		1
103	Corrections to "Ballistic transport in high electron mobility transistors". IEEE Transactions on Electron Devices, 2003, 50, 2185-2185.	1.6	1
104	Design of a novel three-valued static memory using schottky barrier carbon nanotube FETs. , 0, , .		1
105	CARBON NANOTUBE FIELD-EFFECT TRANSISTORS. Selected Topics in Electornics and Systems, 2007, , 15-30.	0.2	1
106	Electron-phonon scattering in planar MOSFETs with NEGF. , 2010, , .		1
107	Realistic spin-FET performance assessment for reconfigurable logic circuits. , 2010, , .		1
108	Network for Computational Nanotechnology - a strategic plan for global knowledge transfer in research and education. , 2011, , .		1

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109	Approaching the Shockley-Queisser limit in GaAs solar cells. , 2012, , .		1
110	Photoluminescence excitation spectroscopy of p-GaAs surfaces and AlGaAs/GaAs interfaces supported by numerical modeling. , 2012, , .		1
111	Can quasi-saturation in the output characteristics of short-channel graphene field-effect transistors be engineered?. , 2012, , .		1
112	Influence of Ge doping on defect distributions of Cu<inf>2</inf>Zn(Sn<inf>x</inf> Ge<inf>1−x</inf>) (S<inf>y</inf> Se<inf>1−y</inf>) fabricated by nanocrystal ink deposition with selenization. , 2012, , .		1
113	Investigation on the thermoelectric performance of monolayer MoS<inf>2</inf>. , 2014, , .		1
114	NEMO5: Predicting MoS<inf>2</inf> heterojunctions. , 2016, , .		1
115	Effective Mass Approach for n-MOSFETs on Arbitrarily Oriented Wafers. Journal of Computational Electronics, 2004, 3, 281-285.	1.3	0
116	Benchmarking admittance spectroscopy methodologies for solar cell characterization. , 2011, , .		0
117	Effects of texturing on the CV analysis of silicon solar cells. , 2011, , .		0
118	Corrections to â€œOn the Ballistic Injection Velocity in Deeply Scaled MOSFETsâ€•[Aug 09 1674-1680]. IEEE Transactions on Electron Devices, 2012, 59, 3655-3655.	1.6	0
119	Along for the ride: Reflections on the past, present, and future of semiconductor electronics. , 2013, , .		0