Sayeef Salahuddin

List of Publications by Year in Descending Order

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The third column is the impact factor (IF) of the journal, and the fourth column is the number of citations of the article.

151 papers	8,593 citations	46 h-index	90 g-index
174 ext. papers	10,732 ext. citations	8.1 avg, IF	6.54 L-index

#	Paper	IF	Citations
151	A Compact Model of Metal-Ferroelectric-Insulator-Semiconductor Tunnel Junction. *IEEE Transactions on Electron Devices*, **2022**, 69, 414-418	2.9	2
150	Fast Read-After-Write and Depolarization Fields in High Endurance n-Type Ferroelectric FETs. *IEEE Electron Device Letters*, **2022**, 1-1	4.4	6
149	Ultrathin ferroic HfO-ZrO superlattice gate stack for advanced transistors.. *Nature*, **2022**, 604, 65-71	50.4	13
148	Logically synthesized and hardware-accelerated restricted Boltzmann machines for combinatorial optimization and integer factorization. *Nature Electronics*, **2022**, 5, 92-101	28.4	3
147	Emergent ferroelectricity in subnanometer binary oxide films on silicon.. *Science*, **2022**, 376, 648-652	33.3	9
146	Ferroelectric gate oxides for negative capacitance transistors. *MRS Bulletin*, **2021**, 46, 930	3.2	4
145	Large Injection Velocities in Highly Scaled, Fully Depleted Silicon on Insulator Transistors. *IEEE Electron Device Letters*, **2021**, 1-1	4.4	0
144	A Compact Model of Antiferroelectric Capacitor. *IEEE Electron Device Letters*, **2021**, 1-1	4.4	1
143	Double-peaked resonance in harmonic-free acoustically driven ferromagnetic resonance. *Applied Physics Letters*, **2021**, 119, 142403	3.4	0
142	Electric Field-Induced Permittivity Enhancement in Negative-Capacitance FET. *IEEE Transactions on Electron Devices*, **2021**, 68, 1346-1351	2.9	4
141	Unifying femtosecond and picosecond single-pulse magnetic switching in Gd-Fe-Co. *Physical Review B*, **2021**, 103,	3.3	8
140	Energy Storage and Reuse in Negative Capacitance. *IEEE Transactions on Electron Devices*, **2021**, 68, 1861-1865	2.9	0
139	Unified Framework for Charge-Spin Interconversion in Spin-Orbit Materials. *Physical Review Applied*, **2021**, 15,	4.3	3
138	Novel Spin-Orbit Torque Generation at Room Temperature in an All-Oxide Epitaxial La Sr MnO /SrIrO System. *Advanced Materials*, **2021**, 33, e2008269	24	4
137	Atomic scale understanding of the electronic structure of 5d-3d perovskite oxide heterostructures using STEM-EELS.. *Microscopy and Microanalysis*, **2021**, 27, 356-358	0.5	
136	Local negative permittivity and topological phase transition in polar skyrmions. *Nature Materials*, **2021**, 20, 194-201	27	33
135	Epitaxial Ferroelectric Hf Zr O with Metallic Pyrochlore Oxide Electrodes. *Advanced Materials*, **2021**, 33, e2006089	24	12

134	Compact Modeling of Temperature Effects in FDSOI and FinFET Devices Down to Cryogenic Temperatures. *IEEE Transactions on Electron Devices*, **2021**, 68, 4223-4230	2.9	6
133	A Voltage-Controlled Gain Cell Magnetic Memory. *IEEE Electron Device Letters*, **2021**, 42, 1452-1455	4.4	
132	A Compact Model of Polycrystalline Ferroelectric Capacitor. *IEEE Transactions on Electron Devices*, **2021**, 68, 5311-5314	2.9	6
131	Ferroelectric HfO2 Memory Transistors With High-□Interfacial Layer and Write Endurance Exceeding 1010 Cycles. *IEEE Electron Device Letters*, **2021**, 1-1	4.4	49
130	Statistically meaningful measure of domain-wall roughness in magnetic thin films. *Physical Review B* , **2020**, 101,	3.3	8
129	Tunneling electroresistance effects in epitaxial complex oxides on silicon. *Applied Physics Letters*, **2020**, 116, 032902	3.4	6
128	Tunable Magnetoelastic Effects in Voltage-Controlled Exchange-Coupled Composite Multiferroic Microstructures. *ACS Applied Materials & Interfaces*, **2020**, 12, 6752-6760	9.5	10
127	Fully transparent field-effect transistor with high drain current and on-off ratio. *APL Materials*, **2020** , 8, 011110	5.7	16
126	Near Threshold Capacitance Matching in a Negative Capacitance FET With 1 nm Effective Oxide Thickness Gate Stack. *IEEE Electron Device Letters*, **2020**, 41, 179-182	4.4	16
125	BSIM Compact Model of Quantum Confinement in Advanced Nanosheet FETs. *IEEE Transactions on Electron Devices*, **2020**, 67, 730-737	2.9	16
124	Experimental Demonstration of a Ferroelectric HfO2-Based Content Addressable Memory Cell. *IEEE Electron Device Letters*, **2020**, 41, 240-243	4.4	28
123	Ferroelectric Domain Wall Motion in Freestanding Single-Crystal Complex Oxide Thin Film. *Advanced Materials*, **2020**, 32, e1907036	24	16
122	Resonant Enhancement of Exchange Coupling for Voltage-Controlled Magnetic Switching. *Physical Review Applied*, **2020**, 14,	4.3	2
121	Highly Scaled, High Endurance, □Gate, Nanowire Ferroelectric FET Memory Transistors. *IEEE Electron Device Letters*, **2020**, 41, 1637-1640	4.4	22
120	Electric-field control of spin dynamics during magnetic phase transitions. *Science Advances*, **2020**, 6,	14.3	10
119	**2020**,		3
118	Design Optimization Techniques in Nanosheet Transistor for RF Applications. *IEEE Transactions on Electron Devices*, **2020**, 67, 4515-4520	2.9	11
117	Analysis and Modeling of Polarization Gradient Effect on Negative Capacitance FET. *IEEE Transactions on Electron Devices*, **2020**, 67, 4521-4525	2.9	3

116	Enhanced ferroelectricity in ultrathin films grown directly on silicon. *Nature*, **2020**, 580, 478-482	50.4	232
115	. *IEEE Electron Device Letters*, **2019**, 40, 1423-1426	4.4	14
114	Ferroelectric Si-doped HfO2 Capacitors for Next-Generation Memories **2019**,		1
113	BSIM-HV: High-Voltage MOSFET Model Including Quasi-Saturation and Self-Heating Effect. *IEEE Transactions on Electron Devices*, **2019**, 66, 4258-4263	2.9	9
112	Generation and stability of structurally imprinted target skyrmions in magnetic multilayers. *Applied Physics Letters*, **2019**, 115, 112404	3.4	9
111	A Spin□Orbit-Torque Memristive Device. *Advanced Electronic Materials*, **2019**, 5, 1800782	6.4	37
110	Characterization and Modeling of Flicker Noise in FinFETs at Advanced Technology Node. *IEEE Electron Device Letters*, **2019**, 40, 985-988	4.4	11
109	Spin-orbit torque and Nernst effect in Bi-Sb/Co heterostructures. *Physical Review B*, **2019**, 99,	3.3	24
108	Spacer Engineering in Negative Capacitance FinFETs. *IEEE Electron Device Letters*, **2019**, 40, 1009-1012	4.4	18
107	Negative Capacitance FET With 1.8-nm-Thick Zr-Doped HfO2 Oxide. *IEEE Electron Device Letters*, **2019**, 40, 993-996	4.4	60
106	Optimization of NCFET by Matching Dielectric and Ferroelectric Nonuniformly Along the Channel. *IEEE Electron Device Letters*, **2019**, 40, 822-825	4.4	13
105	Analysis and Modeling of Inner Fringing Field Effect on Negative Capacitance FinFETs. *IEEE Transactions on Electron Devices*, **2019**, 66, 2023-2027	2.9	20
104	Memristors: A Spin□Orbit-Torque Memristive Device (Adv. Electron. Mater. 4/2019). *Advanced Electronic Materials*, **2019**, 5, 1970022	6.4	3
103	Ultrafast magnetization switching in nanoscale magnetic dots. *Applied Physics Letters*, **2019**, 114, 232407	3.4	18
102	Micromagnetic analysis and optimization of spin-orbit torque switching processes in synthetic antiferromagnets. *Journal of Applied Physics*, **2019**, 126, 163905	2.5	4
101	Anomalously Beneficial Gate-Length Scaling Trend of Negative Capacitance Transistors. *IEEE Electron Device Letters*, **2019**, 40, 1860-1863	4.4	11
100	Negative Capacitance Transistors. *Proceedings of the IEEE*, **2019**, 107, 49-62	14.3	59
99	Proposal for Capacitance Matching in Negative Capacitance Field-Effect Transistors. *IEEE Electron Device Letters*, **2019**, 40, 463-466	4.4	36

98	Spatially resolved steady-state negative capacitance. *Nature*, **2019**, 565, 468-471	50.4	144
97	Designing 0.5 V 5-nm HP and 0.23 V 5-nm LP NC-FinFETs With Improved ${I}_{ mathrm{scriptscriptstyle OFF}}$ Sensitivity in Presence of Parasitic Capacitance. *IEEE Transactions on Electron Devices*, **2018**, 65, 1211-1216	2.9	22
96	Engineering Negative Differential Resistance in NCFETs for Analog Applications. *IEEE Transactions on Electron Devices*, **2018**, 65, 2033-2039	2.9	49
95	Improved Subthreshold Swing and Short Channel Effect in FDSOI n-Channel Negative Capacitance Field Effect Transistors. *IEEE Electron Device Letters*, **2018**, 39, 300-303	4.4	93
94	Electrically induced, non-volatile, metal insulator transition in a ferroelectric-controlled MoS2 transistor. *Applied Physics Letters*, **2018**, 112, 043107	3.4	16
93	A Nitrided Interfacial Oxide for Interface State Improvement in Hafnium Zirconium Oxide-Based Ferroelectric Transistor Technology. *IEEE Electron Device Letters*, **2018**, 39, 95-98	4.4	20
92	Modeling of Advanced RF Bulk FinFETs. *IEEE Electron Device Letters*, **2018**, 39, 791-794	4.4	8
91	NCFET Design Considering Maximum Interface Electric Field. *IEEE Electron Device Letters*, **2018**, 39, 1254-1257	4.4	19
90	One-Dimensional Spin Channel in Two-Dimensional Transition Metal Dichalcogenide Heterostructures. *IEEE Nanotechnology Magazine*, **2018**, 17, 1053-1057	2.6	5
89	In situferromagnetic resonance capability on a polarized neutron reflectometry beamline. *Journal of Applied Crystallography*, **2018**, 51, 9-16	3.8	4
88	Mapping Polarity, Toroidal Order, and the Local Energy Landscape by 4D-STEM. *Microscopy and Microanalysis*, **2018**, 24, 176-177	0.5	1
87	The era of hyper-scaling in electronics. *Nature Electronics*, **2018**, 1, 442-450	28.4	190
86	Electrically controlled switching of the magnetization state in multiferroic BaTiO3/CoFe submicrometer structures. *Physical Review Materials*, **2018**, 2,	3.2	7
85	Multidomain Phase-Field Modeling of Negative Capacitance Switching Transients. *IEEE Transactions on Electron Devices*, **2018**, 65, 295-298	2.9	13
84	Negative-Capacitance FinFET Inverter, Ring Oscillator, SRAM Cell, and Ft **2018**,		14
83	Response Speed of Negative Capacitance FinFETs **2018**,		19
82	**2018**,		34
81	Negative-Capacitance FinFETs: Numerical Simulation, Compact Modeling and Circuit Evaluation **2018**,		8

80	Variation Caused by Spatial Distribution of Dielectric and Ferroelectric Grains in a Negative Capacitance Field-Effect Transistor. *IEEE Transactions on Electron Devices*, **2018**, 65, 4652-4658	2.9	15
79	Novel Cascadable Magnetic Majority Gates for Implementing Comprehensive Logic Functions. *IEEE Transactions on Electron Devices*, **2018**, 65, 4687-4693	2.9	3
78	Voltage-driven, local, and efficient excitation of nitrogen-vacancy centers in diamond. *Science Advances*, **2018**, 4, eaat6574	14.3	25
77	Ferroelectric negative capacitance domain dynamics. *Journal of Applied Physics*, **2018**, 123, 184101	2.5	50
76	High Speed Epitaxial Perovskite Memory on Flexible Substrates. *Advanced Materials*, **2017**, 29, 1605699	24	58
75	A Predictive Tunnel FET Compact Model With Atomistic Simulation Validation. *IEEE Transactions on Electron Devices*, **2017**, 64, 599-605	2.9	18
74	Interface Engineering of Domain Structures in BiFeO Thin Films. *Nano Letters*, **2017**, 17, 486-493	11.5	52
73	**2017**,		4
72	Self-Aligned, Gate Last, FDSOI, Ferroelectric Gate Memory Device With 5.5-nm Hf0.8Zr0.2O2, High Endurance and Breakdown Recovery. *IEEE Electron Device Letters*, **2017**, 38, 1379-1382	4.4	61
71	Nonvolatile MoS2 field effect transistors directly gated by single crystalline epitaxial ferroelectric. *Applied Physics Letters*, **2017**, 111, 023104	3.4	33
70	Intrinsic speed limit of negative capacitance transistors. *IEEE Electron Device Letters*, **2017**, 38, 1328-1330	4.4	42
69	Work Function Engineering for Performance Improvement in Leaky Negative Capacitance FETs. *IEEE Electron Device Letters*, **2017**, 38, 1335-1338	4.4	44
68	Spin wave generation by surface acoustic waves. *Journal of Applied Physics*, **2017**, 122, 043904	2.5	36
67	Compact Modeling Source-to-Drain Tunneling in Sub-10-nm GAA FinFET With Industry Standard Model. *IEEE Transactions on Electron Devices*, **2017**, 64, 3576-3581	2.9	10
66	Modeling of Back-Gate Effects on Gate-Induced Drain Leakage and Gate Currents in UTB SOI MOSFETs. *IEEE Transactions on Electron Devices*, **2017**, 64, 3986-3990	2.9	7
65	Stabilization of ferroelectric phase in tungsten capped Hf0.8Zr0.2O2. *Applied Physics Letters*, **2017**, 111, 022907	3.4	36
64	Spin-orbit torque switching of ultralarge-thickness ferrimagnetic GdFeCo. *Physical Review B*, **2017**, 96,	3.3	55
63	Implementing p-bits With Embedded MTJ. *IEEE Electron Device Letters*, **2017**, 38, 1767-1770	4.4	58

62	Hidden Magnetic States Emergent Under Electric Field, In A Room Temperature Composite Magnetoelectric Multiferroic. *Scientific Reports*, **2017**, 7, 15460	4.9	20
61	Ultrafast magnetization reversal by picosecond electrical pulses. *Science Advances*, **2017**, 3, e1603117	14.3	77
60	Sustained Sub-60 mV/decade Switching via the Negative Capacitance Effect in MoS Transistors. *Nano Letters*, **2017**, 17, 4801-4806	11.5	179
59	Ultrafast magnetic switching of GdFeCo with electronic heat currents. *Physical Review B*, **2017**, 95,	3.3	34
58	Enabling Energy-Efficient Nonvolatile Computing With Negative Capacitance FET. *IEEE Transactions on Electron Devices*, **2017**, 64, 3452-3458	2.9	55
57	Impact of Parasitic Capacitance and Ferroelectric Parameters on Negative Capacitance FinFET Characteristics. *IEEE Electron Device Letters*, **2017**, 38, 142-144	4.4	60
56	Differential voltage amplification from ferroelectric negative capacitance. *Applied Physics Letters*, **2017**, 111, 253501	3.4	27
55	Intrinsic Limits to Contact Resistivity in Transition Metal Dichalcogenides. *IEEE Electron Device Letters*, **2017**, 38, 1755-1758	4.4	2
54	Analysis and Compact Modeling of Negative Capacitance Transistor with High ON-Current and Negative Output Differential Resistance—Part I: Model Description. *IEEE Transactions on Electron Devices*, **2016**, 63, 4981-4985	2.9	54
53	Direct Observation of Negative Capacitance in Polycrystalline Ferroelectric HfO2. *Advanced Functional Materials*, **2016**, 26, 8643-8649	15.6	168
52	Analysis and Compact Modeling of Negative Capacitance Transistor with High ON-Current and Negative Output Differential Resistance—Part II: Model Validation. *IEEE Transactions on Electron Devices*, **2016**, 63, 4986-4992	2.9	109
51	Effects of the Variation of Ferroelectric Properties on Negative Capacitance FET Characteristics. *IEEE Transactions on Electron Devices*, **2016**, 63, 2197-2199	2.9	103
50	Single crystal functional oxides on silicon. *Nature Communications*, **2016**, 7, 10547	17.4	106
49	Negative Capacitance in Short-Channel FinFETs Externally Connected to an Epitaxial Ferroelectric Capacitor. *IEEE Electron Device Letters*, **2016**, 37, 111-114	4.4	153
48	Review of negative capacitance transistors **2016**,		8
47	Compact models of negative-capacitance FinFETs: Lumped and distributed charge models **2016**,		55
46	Surface states in a monolayer MoS2 transistor. *Journal of Materials Research*, **2016**, 31, 911-916	2.5	7
45	Negative Capacitance Behavior in a Leaky Ferroelectric. *IEEE Transactions on Electron Devices*, **2016**, 63, 4416-4422	2.9	78

44	Circuit performance analysis of negative capacitance FinFETs **2016**,		27
43	Magnetization Switching and Domain Wall Motion Due to Spin Orbit Torque **2016**, 165-187		
42	Memory leads the way to better computing. *Nature Nanotechnology*, **2015**, 10, 191-4	28.7	497
41	Switching of perpendicularly polarized nanomagnets with spin orbit torque without an external magnetic field by engineering a tilted anisotropy. *Proceedings of the National Academy of Sciences of the United States of America*, **2015**, 112, 10310-5	11.5	162
40	Screening in Ultrashort (5 nm) Channel MoS2 Transistors: A Full-Band Quantum Transport Study. *IEEE Transactions on Electron Devices*, **2015**, 62, 2457-2463	2.9	15
39	Negative capacitance in a ferroelectric capacitor. *Nature Materials*, **2015**, 14, 182-6	27	438
38	Deterministic Domain Wall Motion Orthogonal To Current Flow Due To Spin Orbit Torque. *Scientific Reports*, **2015**, 5, 11823	4.9	49
37	Modeling SiGe FinFETs With Thin Fin and Current-Dependent Source/Drain Resistance. *IEEE Electron Device Letters*, **2015**, 36, 636-638	4.4	7
36	Sub-60mV-swing negative-capacitance FinFET without hysteresis **2015**,		123
35	Negative capacitance in ferroelectric materials and implications for steep transistors **2015**,		5
34	Large resistivity modulation in mixed-phase metallic systems. *Nature Communications*, **2015**, 6, 5959	17.4	132
33	Room-temperature antiferromagnetic memory resistor. *Nature Materials*, **2014**, 13, 367-74	27	435
32	Spin Hall effect clocking of nanomagnetic logic without a magnetic field. *Nature Nanotechnology*, **2014**, 9, 59-63	28.7	170
31	Room-temperature negative capacitance in a ferroelectric-dielectric superlattice heterostructure. *Nano Letters*, **2014**, 14, 5814-9	11.5	105
30	Gate Recessed Quasi-Normally OFF Al2O3/AlGaN/GaN MIS-HEMT With Low Threshold Voltage Hysteresis Using PEALD AlN Interfacial Passivation Layer. *IEEE Electron Device Letters*, **2014**, 35, 732-734	4.4	70
29	Magnetic domain-wall motion twisted by nanoscale probe-induced spin transfer. *Physical Review B*, **2014**, 90,	3.3	13
28	Can piezoelectricity lead to negative capacitance? **2014**,		2
27	Deterministic switching of ferromagnetism at room temperature using an electric field. *Nature*, **2014**, 516, 370-3	50.4	449

26	Electrical Characteristics of n, p-In0.53Ga0.47As MOSCAPs With In Situ PEALD-AlN Interfacial Passivation Layer. *IEEE Transactions on Electron Devices*, **2014**, 61, 2774-2778	2.9	33
25	Low power negative capacitance FETs for future quantum-well body technology **2013**,		10
24	Dependence of intrinsic performance of transition metal dichalcogenide transistors on materials and number of layers at the 5 nm channel-length limit **2013**,		20
23	Device design considerations for ultra-thin body non-hysteretic negative capacitance FETs **2013**,		17
22	Ballistic I-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	2.9	16
21	Nature of magnetic domains in an exchange coupled BiFeO3/CoFe heterostructure. *Applied Physics Letters*, **2013**, 102, 112902	3.4	21
20	Phenomenological Compact Model for QM Charge Centroid in Multigate FETs. *IEEE Transactions on Electron Devices*, **2013**, 60, 1480-1484	2.9	11
19	Possible route to low current, high speed, dynamic switching in a perpendicular anisotropy CoFeB-MgO junction using Spin Hall Effect of Ta **2012**,		6
18	Effect of anti-ferromagnet surface moment density on the hysteresis properties of exchange coupled antiferromagnet-ferromagnet systems: The case of bismuth-ferrite. *Journal of Applied Physics*, **2012**, 111, 103904	2.5	3
17	Phase field model of domain dynamics in micron scale, ultrathin ferroelectric films: Application for multiferroic bismuth ferrite. *Journal of Applied Physics*, **2012**, 112, 074102	2.5	7
16	Experimental evidence of ferroelectric negative capacitance in nanoscale heterostructures. *Applied Physics Letters*, **2011**, 99, 113501	3.4	210
15	Role of phonon scattering in graphene nanoribbon transistors: Nonequilibrium Green□ function method with real space approach. *Applied Physics Letters*, **2011**, 98, 203503	3.4	28
14	Built-in and induced polarization across LaAlO3/SrTiO3 heterojunctions. *Nature Physics*, **2011**, 7, 80-86	16.2	167
13	Ferroelectric negative capacitance MOSFET: Capacitance tuning & antiferroelectric operation **2011**,		180
12	Heterojunction Vertical Band-to-Band Tunneling Transistors for Steep Subthreshold Swing and High on Current. *IEEE Electron Device Letters*, **2011**, 32, 689-691	4.4	65
11	Dual-Source-Line-Bias Scheme to Improve the Read Margin and Sensing Accuracy of STTRAM in Sub-90-nm Nodes. *IEEE Transactions on Circuits and Systems II: Express Briefs*, **2010**, 57, 208-212	3.5	3
10	Quantitative model for TMR and spin-transfer torque in MTJ devices **2010**,		17
9	Switching Energy of Ferromagnetic Logic Bits. *IEEE Nanotechnology Magazine*, **2009**, 8, 505-514	2.6	54

8	Use of negative capacitance to provide voltage amplification for low power nanoscale devices. *Nano Letters*, **2008**, 8, 405-10	11.5	1257
7	Can the subthreshold swing in a classical FET be lowered below 60 mV/decade? **2008**,		68
6	Quantum Transport Simulation of Tunneling Based Spin Torque Transfer (STT) Devices: Design Trade offs and Torque Efficiency **2007**,		11
5	Self-Consistent Simulation of Hybrid Spintronic Devices **2006**,		8
4	High-frequency performance projections for ballistic carbon-nanotube transistors. *IEEE Nanotechnology Magazine*, **2006**, 5, 14-22	2.6	51
3	Transport effects on signal propagation in quantum wires. *IEEE Transactions on Electron Devices*, **2005**, 52, 1734-1742	2.9	134
2	RKKY Exchange Bias Mediated Ultrafast All-Optical Switching of a Ferromagnet. *Advanced Functional Materials*,2107490	15.6	3
1	One Nanometer HfO2-Based Ferroelectric Tunnel Junctions on Silicon. *Advanced Electronic Materials*,2100499	6.4	14