

Robert A Buhrman

List of Publications by Year in descending order

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113
papers

15,279
citations

50273

46
h-index

24978

109
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115
all docs

115
docs citations

115
times ranked

6455
citing authors

#	ARTICLE	IF	CITATIONS
1	Spin-Torque Switching with the Giant Spin Hall Effect of Tantalum. <i>Science</i> , 2012, 336, 555-558.	12.6	3,176
2	Current-Induced Switching of Perpendicularly Magnetized Magnetic Layers Using Spin Torque from the Spin Hall Effect. <i>Physical Review Letters</i> , 2012, 109, 096602.	7.8	1,354
3	Spin-Torque Ferromagnetic Resonance Induced by the Spin Hall Effect. <i>Physical Review Letters</i> , 2011, 106, 036601.	7.8	1,323
4	Current-Induced Switching of Domains in Magnetic Multilayer Devices. <i>Science</i> , 1999, 285, 867-870.	12.6	1,232
5	Spin transfer torque devices utilizing the giant spin Hall effect of tungsten. <i>Applied Physics Letters</i> , 2012, 101, 122404.	3.3	1,173
6	Time-Domain Measurements of Nanomagnet Dynamics Driven by Spin-Transfer Torques. <i>Science</i> , 2005, 307, 228-231.	12.6	495
7	Control of spin-orbit torques through crystal symmetry in WTe ₂ /ferromagnet bilayers. <i>Nature Physics</i> , 2017, 13, 300-305.	16.7	489
8	Dependence of the efficiency of spin Hall torque on the transparency of Pt/ferromagnetic layer interfaces. <i>Physical Review B</i> , 2015, 92, .	3.2	380
9	Spin Torque Study of the Spin Hall Conductivity and Spin Diffusion Length in Platinum Thin Films with Varying Resistivity. <i>Physical Review Letters</i> , 2016, 116, 126601.	7.8	353
10	Magnetic Oscillations Driven by the Spin Hall Effect in 3-Terminal Magnetic Tunnel Junction Devices. <i>Physical Review Letters</i> , 2012, 109, 186602.	7.8	306
11	Central role of domain wall depinning for perpendicular magnetization switching driven by spin torque from the spin Hall effect. <i>Physical Review B</i> , 2014, 89, .	3.2	221
12	Thermally Activated Magnetic Reversal Induced by a Spin-Polarized Current. <i>Physical Review Letters</i> , 2002, 89, 196801.	7.8	210
13	Enhancement of perpendicular magnetic anisotropy and transmission of spin-Hall-effect-induced spin currents by a Hf spacer layer in W/Hf/CoFeB/MgO layer structures. <i>Applied Physics Letters</i> , 2014, 104, .	3.3	206
14	Production of YBa ₂ Cu ₃ O _{7-δ} superconducting thin films in situ by high-pressure reactive evaporation and rapid thermal annealing. <i>Applied Physics Letters</i> , 1987, 51, 1554-1556.	3.3	203
15	Role of interfacial nitrogen in improving thin silicon oxides grown in N ₂ O. <i>Applied Physics Letters</i> , 1993, 63, 54-56.	3.3	163
16	Highly Efficient Spin-Current Generation by the Spin Hall Effect in $\text{Au}/\text{Pt}/\text{Au}$ Structures. <i>Physical Review Applied</i> , 2018, 10, .	3.8	158
17	Crystallography of YBa ₂ Cu ₃ O _{6+x} thin film-substrate interfaces. <i>Journal of Materials Research</i> , 1989, 4, 1072-1081.	2.6	147
18	Scaling behavior of YBa ₂ Cu ₃ O _{7-δ} thin film weak links. <i>Applied Physics Letters</i> , 1990, 57, 1155-1157.	3.3	134

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19	Spin-Orbit Torques in Heavy-Metal/Ferromagnet Bilayers with Varying Strengths of Interfacial Spin-Orbit Coupling. <i>Physical Review Letters</i> , 2019, 122, 077201.	7.8	130
20	Effective Spin-Mixing Conductance of Heavy-Metal/Ferromagnet Interfaces. <i>Physical Review Letters</i> , 2019, 123, 057203.	7.8	124
21	Nanosecond-Timescale Low Energy Switching of In-Plane Magnetic Tunnel Junctions through Dynamic Oersted-Field-Assisted Spin Hall Effect. <i>Nano Letters</i> , 2016, 16, 5987-5992.	9.1	119
22	Strong Damping-Like Spin-Orbit Torque and Tunable Dzyaloshinskii-Moriya Interaction Generated by Low-Resistivity Pd _{1-x} Pt _x Alloys. <i>Advanced Functional Materials</i> , 2019, 29, 1805822.	14.9	116
23	N depth profiles in thin SiO ₂ grown or processed in N ₂ O: The role of atomic oxygen. <i>Applied Physics Letters</i> , 1995, 66, 1492-1494.	3.3	114
24	Enhancement of the anti-damping spin torque efficacy of platinum by interface modification. <i>Applied Physics Letters</i> , 2015, 106, .	3.3	105
25	Thickness dependence of spin-orbit torques generated by WTe ₂ . <i>Physical Review B</i> , 2017, 96, .	3.2	104
26	Origin of fieldlike spin-orbit torques in heavy metal/ferromagnet/oxide thin film heterostructures. <i>Physical Review B</i> , 2016, 94, .	3.2	95
27	X-ray photoemission study of CoFeB/MgO thin film bilayers. <i>Applied Physics Letters</i> , 2007, 90, 132503.	3.3	87
28	Statistical model for coalescence of islands in discontinuous films. <i>Applied Physics Letters</i> , 1975, 27, 693-694.	3.3	79
29	Enhanced spin Hall torque efficiency in Pt _{100-x} Al _x and Pt _{100-x} Hf _x alloys arising from the intrinsic spin Hall effect. <i>Applied Physics Letters</i> , 2016, 108, .	3.3	78
30	Current fluctuations and silicon oxide wear-out in metal/oxide/semiconductor tunnel diodes. <i>Applied Physics Letters</i> , 1988, 52, 1749-1751.	3.3	75
31	Strong spin Hall effect in the antiferromagnet PtMn. <i>Physical Review B</i> , 2016, 93, .	3.2	74
32	Variation of the giant intrinsic spin Hall conductivity of Pt with carrier lifetime. <i>Science Advances</i> , 2019, 5, eaav8025.	10.3	73
33	Increased low-temperature damping in yttrium iron garnet thin films. <i>Physical Review B</i> , 2017, 95, .	3.2	72
34	High-quality submicron niobium tunnel junctions with reactive-ion-beam oxidation. <i>Applied Physics Letters</i> , 1980, 37, 841-843.	3.3	70
35	Reorientable Spin Direction for Spin Current Produced by the Anomalous Hall Effect. <i>Physical Review Applied</i> , 2018, 9, .	3.8	67
36	Maximizing spin-orbit torque generated by the spin Hall effect of Pt. <i>Applied Physics Reviews</i> , 2021, 8, .	11.3	67

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37	High-frequency characterization of thin YBaCu oxide superconducting transmission lines. Applied Physics Letters, 1988, 52, 1444-1446.	3.3	65
38	Clean grain boundaries and weak links in high-T _c superconducting YBa ₂ Cu ₃ O _{7-x} thin films. Applied Physics Letters, 1990, 57, 508-510.	3.3	64
39	Transport properties of high-angle grain boundary weak links in YBa ₂ Cu ₃ O ₇ thin films. Applied Physics Letters, 1991, 58, 1095-1097.	3.3	64
40	A Three-Terminal Approach to Developing Spin-Torque Written Magnetic Random Access Memory Cells. IEEE Nanotechnology Magazine, 2009, 8, 190-195.	2.0	63
41	Ballistic electron magnetic microscopy: Imaging magnetic domains with nanometer resolution. Applied Physics Letters, 1999, 75, 1001-1003.	3.3	61
42	Spatially resolved electron energy-loss spectroscopy of electron-beam grown and sputtered CoFeB/MgO/CoFeB magnetic tunnel junctions. Applied Physics Letters, 2007, 91, 062516.	3.3	61
43	Layer-dependent spin-orbit torques generated by the centrosymmetric transition metal dichalcogenide CoFeB/MgO/CoFeB Physical Review B, 2019, 100, .	3.2	61
44	Furnace gas-phase chemistry of silicon oxynitridation in N ₂ O. Applied Physics Letters, 1996, 68, 1696-1698.	3.3	58
45	Current-induced realignment of magnetic domains in nanostructured Cu/Co multilayer pillars. Applied Physics Letters, 2000, 76, 354-356.	3.3	57
46	Spin filtering by ultrathin ferromagnetic films. Applied Physics Letters, 1999, 74, 3881-3883.	3.3	51
47	Fully Spin-Transparent Magnetic Interfaces Enabled by the Insertion of a Thin Paramagnetic NiO Layer. Physical Review Letters, 2021, 126, 107204.	7.8	47
48	Irrelevance of magnetic proximity effect to spin-orbit torques in heavy-metal/ferromagnet bilayers. Physical Review B, 2018, 98, .	3.2	46
49	Atomic-scale spectroscopic imaging of CoFeB/MgO/CoFeB magnetic tunnel junctions. Applied Physics Letters, 2009, 95, 032506.	3.3	45
50	Strong Enhancement of the Spin Hall Effect by Spin Fluctuations near the Curie Point of Fe_xM_y Alloys. Physical Review Letters, 2018, 120, 097203.	7.8	45
51	Enhancement of spin transparency by interfacial alloying. Physical Review B, 2019, 99, .	3.2	43
52	Graded-index PtAl ₂ O ₃ composite solar absorbers. Applied Physics Letters, 1981, 39, 29-31.	3.3	42
53	Nitrous oxide (N ₂ O) processing for silicon oxynitride gate dielectrics. IBM Journal of Research and Development, 1999, 43, 287-300.	3.1	42
54	Optical properties of selectively absorbing metal insulator composite films. Journal of Vacuum Science and Technology, 1978, 15, 269-271.	1.9	41

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55	Boron Diffusion in Silicon Oxides and Oxynitrides. Journal of the Electrochemical Society, 1998, 145, 2068-2074.	2.9	40
56	Exceptionally High, Strongly Temperature Dependent, Spin Hall Conductivity of SrRuO ₃ . Nano Letters, 2019, 19, 3663-3670.	9.1	40
57	Transverse and Longitudinal Spin-Torque Ferromagnetic Resonance for Improved Measurement of Spin-Orbit Torque. Physical Review Applied, 2020, 14, .	3.8	40
58	Epitaxial YBaCuO thin films on MgO deposited by high-pressure reactive magnetron sputtering. Journal of Applied Physics, 1989, 66, 3148-3153.	2.5	38
59	Energy-efficient Ultrafast SOT-MRAMs Based on Low-resistivity Spin Hall Metal Au _{0.25} Pt _{0.75} . Advanced Electronic Materials, 2020, 6, 1901131.	5.1	35
60	Observation of Strong Bulk Damping-Like Spin-Orbit Torque in Chemically Disordered Ferromagnetic Single Layers. Advanced Functional Materials, 2020, 30, 2005201.	14.9	34
61	Ballistic electron studies and modification of the Au/Si interface. Applied Physics Letters, 1990, 57, 2826-2828.	3.3	32
62	Current-Induced Torques with Dresselhaus Symmetry Due to Resistance Anisotropy in 2D Materials. ACS Nano, 2019, 13, 2599-2605.	14.6	32
63	Low-damping sub-10-nm thin films of lutetium iron garnet grown by molecular-beam epitaxy. Applied Physics Letters, 2016, 109, .	3.3	29
64	Effects of Anisotropic Strain on Spin-Orbit Torque Produced by the Dirac Nodal Line Semimetal IrO ₂ . ACS Applied Materials & Interfaces, 2020, 12, 55411-55416.	8.0	29
65	Time-dependent diffusivity of boron in silicon oxide and oxynitride. Applied Physics Letters, 1999, 74, 967-969.	3.3	27
66	Ballistic electron microscopy study of ultrathin oxidized aluminum barriers for magnetic tunnel junctions. Applied Physics Letters, 2001, 78, 1601-1603.	3.3	27
67	Nanosecond magnetization dynamics during spin Hall switching of in-plane magnetic tunnel junctions. Applied Physics Letters, 2017, 110, .	3.3	27
68	Current-phase relations as determinants of superconducting thin-film weak-link characteristics. Applied Physics Letters, 1976, 29, 214-216.	3.3	26
69	Magnetoresistance and magnetostriction effects in ballistic ferromagnetic nanoconstrictions. Journal of Applied Physics, 2004, 95, 7315-7317.	2.5	25
70	Cryogenic Memory Architecture Integrating Spin Hall Effect based Magnetic Memory and Superconductive Cryotron Devices. Scientific Reports, 2020, 10, 248.	3.3	25
71	SQUID techniques.I. Obtaining reliability in point-contact SQUID's. Journal of Applied Physics, 1974, 45, 4045-4048.	2.5	24
72	Atomic-scale characterization of a Co/AlOx/Co magnetic tunnel junction by scanning transmission electron microscopy. Applied Physics Letters, 2001, 79, 391-393.	3.3	24

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73	High magnetoresistance tunnel junctions with MgO barriers and NiFe free electrodes. Applied Physics Letters, 2009, 94, 112504.	3.3	22
74	Efficient switching of 3-terminal magnetic tunnel junctions by the giant spin Hall effect of Pt85Hf15 alloy. Applied Physics Letters, 2018, 112, .	3.3	22
75	Unveiling the Mechanism of Bulk Spin-Orbit Torques within Chemically Disordered FePt Single Layers. Advanced Functional Materials, 2021, 31, 2103898.	14.9	22
76	Josephson properties of basal-plane-faced tilt boundaries in YBa2Cu3O7 thin films. Applied Physics Letters, 1994, 65, 3126-3128.	3.3	21
77	A structural and electrical comparison of thin SiO2 films grown on silicon by plasma anodization and rapid thermal processing to furnace oxidation. Journal of Applied Physics, 1988, 63, 5027-5035.	2.5	20
78	Observation of magnetization reversal of thin-film permalloy nanostructures using ballistic electron magnetic microscopy. Applied Physics Letters, 2000, 77, 1357-1359.	3.3	19
79	Response times and low-voltage behavior of SNS microbridges. Applied Physics Letters, 1979, 34, 415-418.	3.3	18
80	Tunneling spectroscopy studies of treated aluminum oxide tunnel barrier layers. Applied Physics Letters, 2005, 86, 242504.	3.3	18
81	Width dependence of giant magnetoresistance in Cu/Co multilayer nanowires. Applied Physics Letters, 1999, 74, 1883-1885.	3.3	17
82	Thin silicon oxides grown by low-temperature rf plasma anodization and deposition. Applied Physics Letters, 1987, 50, 1095-1097.	3.3	16
83	Reactive ion etching of niobium. Journal of Vacuum Science and Technology, 1981, 19, 1394-1397.	1.9	15
84	NbN Josephson tunnel junctions for terahertz local oscillators. Applied Physics Letters, 1988, 53, 2441-2443.	3.3	15
85	All-Spin-Orbit Switching of Perpendicular Magnetization. IEEE Transactions on Electron Devices, 2016, 63, 4499-4505.	3.0	15
86	Strong perpendicular magnetic anisotropy energy density at Fe alloy/HfO2 interfaces. Applied Physics Letters, 2017, 110, 192403.	3.3	15
87	Weak Link Point Contact Devices. Journal of Applied Physics, 1971, 42, 45-45.	2.5	14
88	The removal of nitrogen during boron indiffusion in silicon gate oxynitrides. Applied Physics Letters, 1996, 69, 535-537.	3.3	14
89	Ballistic electron magnetic microscopy studies of magnetization reversal in Co/Cu/Co trilayer films. Journal of Applied Physics, 2000, 87, 6490-6492.	2.5	13
90	Absence of Significant Spin-Current Generation in Ti/Fe/Bilayers with Strong Interfacial Spin-Orbit Coupling. Physical Review Applied, 2021, 15, .	3.8	13

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91	Pulsed Laser Deposition of High T_c Superconducting Thin Films. Materials Research Society Symposia Proceedings, 1989, 169, 455.	0.1	12
92	Interfacial and bulk spin Hall contributions to fieldlike spin-orbit torque generated by iridium. Physical Review B, 2021, 103, .	3.2	11
93	A multilayer, high resolution, ion bombardment-tolerant electron resist system. Journal of Vacuum Science and Technology, 1981, 19, 1308-1312.	1.9	9
94	Point-contact studies of current-controlled domain switching in magnetic multilayers. Journal of Applied Physics, 2000, 87, 5502-5504.	2.5	9
95	Millimeter wave mixing with submicron area Nb tunnel junctions. Journal of Applied Physics, 1982, 53, 823-827.	2.5	7
96	Capacitively shunted variable thickness microbridges. Applied Physics Letters, 1977, 31, 362-365.	3.3	5
97	Superconducting lead variable thickness microbridges. Journal of Applied Physics, 1977, 48, 5360-5361.	2.5	4
98	Transport Measurements on Superconducting $YBa_2Cu_3O_{7-x}$ Thin Film Lines. Materials Research Society Symposia Proceedings, 1989, 169, 1193.	0.1	4
99	Nanosecond Reversal of Three-Terminal Spin-Hall-Effect Memories Sustained at Cryogenic Temperatures. Physical Review Applied, 2021, 15, .	3.8	4
100	The Morphology of $YBa_2Cu_3O_{7-x}$ Thin Films Grown on Ceramic Substrates. Materials Research Society Symposia Proceedings, 1987, 99, 719.	0.1	3
101	Ballistic current transport studies of ferromagnetic multilayer films and tunnel junctions (invited). Journal of Applied Physics, 2001, 89, 6642-6646.	2.5	3
102	Loss of polarization in a hot-electron current through electron-electron scattering. Journal of Applied Physics, 2005, 98, 093713.	2.5	3
103	Origin of transverse voltages generated by thermal gradients and electric fields in ferrimagnetic-insulator/heavy-metal bilayers. Physical Review B, 2022, 105, .	3.2	3
104	High Temperature Superconductivity Update. Materials and Processing Report, 1988, 2, 4-7.	0.0	2
105	Grain Boundaries in $YBa_2Cu_3O_{7-x}$ Thin Films. Materials Research Society Symposia Proceedings, 1989, 169, 513.	0.1	2
106	Analytical electron microscopy study of growth mechanism for smoothing of metallic multilayer thin films. Applied Physics Letters, 2006, 89, 162509.	3.3	2
107	Interface and oxide quality of CoFeB/MgO/Si tunnel junctions. Journal of Applied Physics, 2012, 111, 093908.	2.5	2
108	In-Situ Production of Superconducting $YBa_2Cu_3O_{7-y}$ Thin Films by High Pressure Reactive Evaporation with Rapid Thermal Annealing. Materials Research Society Symposia Proceedings, 1987, 99, 113.	0.1	1

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109	Structure and Growth of N ₂ O Gate Oxynitrides. Materials Research Society Symposia Proceedings, 1996, 428, 393.	0.1	1
110	A Study of Grain Boundaries in High TC Superconducting YBa ₂ Cu ₃ O _{7-x} Thin Films Using High Resolution Analytical Stem. Materials Research Society Symposia Proceedings, 1989, 169, 773.	0.1	0
111	Optimizing Process Parameters for the Growth of YBa ₂ Cu ₃ O _{7-δ} thin-films. Materials Research Society Symposia Proceedings, 1990, 191, 141.	0.1	0
112	Interface and oxide quality of CoFeB/MgO/Si tunnel junctions. , 2010, , .		0
113	Fast, reliable spin-orbit-torque switching in three terminal magnetic tunnel junctions with Hf dusting layer. , 2018, , .		0