Randolph E Elmquist

List of Publications by Year
in descending order

106 papers	1,573 citations	279798 23 h-index	377865 34 g-index
106 all docs	106 docs citations	106 times ranked	1023 citing authors

#	Article	IF	Citations
1	NBS determination of the fine-structure constant, and of the quantized Hall resistance and Josephson frequency-to-voltage quotient in SI units. IEEE Transactions on Instrumentation and Measurement, 1989, 38, 284-289.	4.7	80
2	NIST comparison of the quantized Hall resistance and the realization of the SI OHM through the calculable capacitor. IEEE Transactions on Instrumentation and Measurement, 1997, 46, 264-268.	4.7	69
3	Part-per-million quantization and current-induced breakdown of the quantum anomalous Hall effect. Physical Review B, 2018, 98, .	3.2	65
4	Low Carrier Density Epitaxial Graphene Devices On SiC. Small, 2015, 11, 90-95.	10.0	59
5	Epitaxial graphene homogeneity and quantum Hall effect in millimeter-scale devices. Carbon, 2017, 115, 229-236.	10.3	57
6	Determination of the von Klitzing constant and the fine-structure constant through a comparison of the quantized Hall resistance and the ohm derived from the NIST calculable capacitor. Metrologia, 1998, 35, 83-96.	1.2	56
7	A measurement of the NBS electrical watt in SI units. IEEE Transactions on Instrumentation and Measurement, 1989, 38, 238-244.	4.7	41
8	Graphene Epitaxial Growth on SiC(0001) for Resistance Standards. IEEE Transactions on Instrumentation and Measurement, 2013, 62, 1454-1460.	4.7	37
9	Gateless and reversible Carrier density tunability in epitaxial graphene devices functionalized with chromium tricarbonyl. Carbon, 2019, 142, 468-474.	10.3	37
10	Confocal laser scanning microscopy for rapid optical characterization of graphene. Communications Physics, 2018, 1, .	5.3	36
11	Electrical Stabilization of Surface Resistivity in Epitaxial Graphene Systems by Amorphous Boron Nitride Encapsulation. ACS Omega, 2017, 2, 2326-2332.	3.5	34
12	The quantum Hall effect in the era of the new SI. Semiconductor Science and Technology, 2019, 34, 093004.	2.0	34
13	Two-Terminal and Multi-Terminal Designs for Next-Generation Quantized Hall Resistance Standards: Contact Material and Geometry. IEEE Transactions on Electron Devices, 2019, 66, 3973-3977.	3.0	34
14	Quantum Hall effect on centimeter scale chemical vapor deposited graphene films. Applied Physics Letters, 2011, 99, 232110.	3.3	33
15	Epitaxial graphene for quantum resistance metrology. Metrologia, 2018, 55, R27-R36.	1.2	33
16	Graphene Devices for Tabletop and High-Current Quantized Hall Resistance Standards. IEEE Transactions on Instrumentation and Measurement, 2019, 68, 1870-1878.	4.7	32
17	Towards epitaxial graphene p-n junctions as electrically programmable quantum resistance standards. Scientific Reports, 2018, 8, 15018.	3.3	31
18	Next-generation crossover-free quantum Hall arrays with superconducting interconnections. Metrologia, 2019, 56, 065002.	1.2	30

#	ARTICLE	IF	CITATIONS
19	Preservation of Surface Conductivity and Dielectric Loss Tangent in Largeâ€Scale, Encapsulated Epitaxial Graphene Measured by Noncontact Microwave Cavity Perturbations. Small, 2017, 13, 1700452.	10.0	29
20	Precision tests of quantum hall effect device DC equivalent circuit using double-series and triple-series connections. Journal of Research of the National Institute of Standards and Technology, 1995, 100, 677.	1.2	27
21	Direct Resistance Comparisons From the QHR to 100 Mâ„¦ Using a Cryogenic Current Comparator. IEEE Transactions on Instrumentation and Measurement, 2005, 54, 525-528.	4.7	25
22	Comparison of quantum Hall effect resistance standards of the NIST and the BIPM. Metrologia, 2000, 37, 173-176.	1.2	24
23	Measuring the dielectric and optical response of millimeter-scale amorphous and hexagonal boron nitride films grown on epitaxial graphene. 2D Materials, 2018, 5, 011011.	4.4	24
24	Surface conductance of graphene from non-contact resonant cavity. Measurement: Journal of the International Measurement Confederation, 2016, 87, 146-151.	5.0	23
25	Quantum transport in graphene <mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML"><mml:mrow><mml:mi>p</mml:mi><mml:mtext>â^'</mml:mtext><mml:mi>n</m junctions with moirÃ© superlattice modulation. Physical Review B, 2018, 98, .	3.2	22
26	Comparison Between NIST Graphene and AIST GaAs Quantized Hall Devices. IEEE Transactions on Instrumentation and Measurement, 2020, 69, 3103-3108.	4.7	22
27	Physics with Negative Ions in Ion Traps. Physica Scripta, 1988, T22, 183-190.	2.5	21
28	Examining epitaxial graphene surface conductivity and quantum Hall device stability with Parylene passivation. Microelectronic Engineering, 2018, 194, 51-55.	2.4	21
29	Precision high-value resistance scaling with a two-terminal cryogenic current comparator. Review of Scientific Instruments, 2014, 85, 044701.	1.3	20
30	Graphene quantum Hall effect parallel resistance arrays. Physical Review B, 2021, 103, .	3.2	20
31	Isolated ramping current sources for a cryogenic current comparator bridge. Review of Scientific Instruments, 1991, 62, 2457-2460.	1.3	18
32	Improvements in resistance scaling at NIST using cryogenic current comparators. IEEE Transactions on Instrumentation and Measurement, 1993, 42, 126-130.	4.7	18
33	Probing the dielectric response of the interfacial buffer layer in epitaxial graphene via optical spectroscopy. Physical Review B, 2017, 96, .	3.2	17
34	Graphene Quantum Hall Effect Devices for AC and DC Electrical Metrology. IEEE Transactions on Electron Devices, 2021, 68, 3672-3677.	3.0	17
35	Observation of resolved Zeeman thresholds in photodetachment in a magnetic field. Physical Review Letters, 1987, 58, 333-336.	7.8	16
36	Chemical-doping-driven crossover from graphene to â€œordinary metalâ€• in epitaxial graphene grown on SiC. Nanoscale, 2017, 9, 11537-11544.	5.6	16

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37	The ampere and electrical standards. Journal of Research of the National Institute of Standards and Technology, 2001, 106, 65.	1.2	15
38	Using a high-value resistor in triangle comparisons of electrical standards. IEEE Transactions on Instrumentation and Measurement, 2003, 52, 590-593.	4.7	15
39	Analytical determination of atypical quantized resistances in graphene p-n junctions. Physica B: Condensed Matter, 2020, 582, 411971.	2.7	15
40	Calculable coaxial resistors for precision measurements. IEEE Transactions on Instrumentation and Measurement, 2000, 49, 210-215.	4.7	14
41	Controlling the Fermi Level in a Single-Layer Graphene QHE Device for Resistance Standard. IEEE Transactions on Instrumentation and Measurement, 2015, 64, 1451-1454.	4.7	14
42	Linear magnetoresistance in monolayer epitaxial graphene grown on SiC. Materials Letters, 2016, 174, 118-121.	2.6	14
43	Highly sensitive broadband binary photoresponse in gateless epitaxial graphene on 4Hâ€“SiC. Carbon, 2021, 184, 72-81.	10.3	13
44	Amorphous superconducting ribbons quenched at elevated substrate temperature. Solid State Communications, 1982, 42, 267-270.	1.9	12
45	High-temperature superconductor cryogenic current comparator. IEEE Transactions on Instrumentation and Measurement, 1995, 44, 262-264.	4.7	12
46	Loading effects in resistance scaling. IEEE Transactions on Instrumentation and Measurement, 1997, 46, 322-324.	4.7	12
47	Uncertainty Evaluation in a Two-Terminal Cryogenic Current Comparator. IEEE Transactions on Instrumentation and Measurement, 2009, 58, 1170-1175.	4.7	12
48	Insulator-quantum Hall transition in monolayer epitaxial graphene. RSC Advances, 2016, 6, 71977-71982.	3.6	12
49	Large, non-saturating magnetoresistance in single layer chemical vapor deposition graphene with an h-BN capping layer. Carbon, 2018, 136, 211-216.	10.3	12
50	Leakage current detection in cryogenic current comparator bridges. IEEE Transactions on Instrumentation and Measurement, 1993, 42, 167-169.	4.7	11
51	Nanostructured graphene for nanoscale electron paramagnetic resonance spectroscopy. JPhys Materials, 2020, 3, 014013.	4.2	11
52	Calculating the effects of longitudinal resistance in multi-series-connected quantum Hall effect devices. Journal of Research of the National Institute of Standards and Technology, 1998, 103, 561.	1.2	11
53	Characterization of four-terminal-pair resistance standards: a comparison of measurements and theory. IEEE Transactions on Instrumentation and Measurement, 2001, 50, 267-271.	4.7	10
54	Temperature dependence of electron density and electronâ€“electron interactions in monolayer epitaxial graphene grown on SiC. 2D Materials, 2017, 4, 025007.	4.4	10

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55	Elucidating charge transport mechanisms in cellulose-stabilized graphene inks. Journal of Materials Chemistry C, 2020, 8, 15086-15091.	5.5	10
56	RMO comparison final report: 2006â€"2007 Resistance standards comparison between SIM laboratories. SIM.EM-K1, 1 Î©; SIM.EM-K2, 1 GÎ©; SIM.EM-S6, 1 MÎ©. Metrologia, 2009, 46, 01001-01001.	1.2	9
57	Dirac fermion heating, current scaling, and direct insulator-quantum Hall transition in multilayer epitaxial graphene. Nanoscale Research Letters, 2013, 8, 360.	5.7	9
58	Cryogenic current comparator measurements at 77 K using thallium-2223 thick-film shields. IEEE Transactions on Instrumentation and Measurement, 1999, 48, 383-386.	4.7	8
59	Transport behavior of commercially available 100-Î© standard resistors. IEEE Transactions on Instrumentation and Measurement, 2001, 50, 242-244.	4.7	8
60	Low-Ohmic Resistance Comparison: Measurement Capabilities and Resistor Traveling Behavior. IEEE Transactions on Instrumentation and Measurement, 2013, 62, 1723-1728.	4.7	8
61	Variable range hopping and nonlinear transport in monolayer epitaxial graphene grown on SiC. Semiconductor Science and Technology, 2016, 31, 105008.	2.0	8
62	Crossover from Efrosâ€"Shklovskii to Mott variable range hopping in monolayer epitaxial graphene grown on SiC. Chinese Journal of Physics, 2017, 55, 1235-1241.	3.9	8
63	Characteristics of precision 1â€‰Î© standard resistors influencing transport behaviour and the uncertainty of key comparisons. Metrologia, 2009, 46, 503-511.	1.2	7
64	The units for mass, voltage, resistance, and electrical current in the SI. IEEE Instrumentation and Measurement Magazine, 2019, 22, 9-16.	1.6	7
65	A four-terminal-pair Josephson impedance bridge combined with a graphene-quantized Hall resistance. Measurement Science and Technology, 2021, 32, 065007.	2.6	7
66	Transportation Effect and Basic Characteristics of Metal-Foil Resistors Examined in an International Trilateral Pilot Study. IEEE Transactions on Instrumentation and Measurement, 2015, 64, 1514-1519.	4.7	6
67	Accessing ratios of quantized resistances in graphene pâ€"n junction devices using multiple terminals. AIP Advances, 2020, 10, 025112.	1.3	6
68	Hot carriers in epitaxial graphene sheets with and without hydrogen intercalation: role of substrate coupling. Nanoscale, 2014, 6, 10562-10568.	5.6	4
69	A Table-Top Graphene Quantized Hall Standard. , 2018, , .		4
70	Uncertainty of the Ohm Using Cryogenic and Non-Cryogenic Bridges. , 2018, , .		4
71	A Self-Assembled Graphene Ribbon Device on SiC. ACS Applied Electronic Materials, 2020, 2, 204-212.	4.3	4
72	Implementation of a graphene quantum Hall Kelvin bridge-on-a-chip for resistance calibrations. Metrologia, 2020, 57, 015007.	1.2	4

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73	Dynamics of transient hole doping in epitaxial graphene. Physical Review B, 2022, 105, .	3.2	4
74	Temperature and Pressure Coefficients of Resistance for Thomas 1 Î© Resistors. NCSL International Measure, 2007, 2, 42-48.	0.1	3
75	Localization and electron-electron interactions in few-layer epitaxial graphene. Nanotechnology, 2014, 25, 245201.	2.6	3
76	Quantum Hall device data monitoring following encapsulating polymer deposition. Data in Brief, 2018, 20, 1201-1208.	1.0	3
77	Onsager-Casimir frustration from resistance anisotropy in graphene quantum Hall devices. Physical Review B, 2021, 104, .	3.2	3
78	Magnetotransport in hybrid InSe/monolayer graphene on SiC. Nanotechnology, 2021, 32, 155704.	2.6	3
79	Imaging and measuring the electronic properties of epitaxial graphene with a photoemission electron microscope. Journal of Applied Physics, 2022, 131, .	2.5	3
80	Uncertainty evaluation in a two-terminal cryogenic current comparator. , 2008, , .		2
81	Characteristics of graphene for quantized hall effect measurements. , 2012, , .		2
82	Charge Trapping in Monolayer and Multilayer Epitaxial Graphene. Journal of Nanomaterials, 2016, 2016, 1-4.	2.7	2
83	Magnetoresistance of Ultralow-Hole-Density Monolayer Epitaxial Graphene Grown on SiC. Materials, 2019, 12, 2696.	2.9	2
84	Graphene quantum Hall effect devices for AC and DC resistance metrology. , 2020, , .		2
85	Comparison Between Graphene and GaAs Quantized Hall Devices With a Dual Probe. IEEE Transactions on Instrumentation and Measurement, 2020, 69, 9374-9380.	4.7	2
86	Analytical determination of atypical quantized resistances in graphene junctions. Physica B: Condensed Matter, 2020, 582, .	2.7	2
87	SIM comparison of dc resistance at 1 Ω, 1 MΩ, and 1 GΩ. , 2008, , .		1
88	Characterization of loading effects in precision 1 Ω resistors. , 2008, , .		1
89	Power Loading Effects in Precision 1 Î© Resistors. NCSL International Measure, 2008, 3, 50-56.	0.1	1
90	SIM Comparison of DC Resistance Standards at 1 $Omega$, 1 $hbox{M}Omega$, and 1 $hbox{G}Omega$. IEEE Transactions on Instrumentation and Measurement, 2009, 58, 1188-1195.	4.7	1

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91	Transportation effect of Ni-Cr based metal-foil standard resistors in a trilateral comparison pilot study between KRISS, NIST, and NMIJ. , 2014, , .		1
92	Thermometry for Dirac fermions in graphene. Journal of the Korean Physical Society, 2015, 66, 1-6.	0.7	1
93	Probing electronâ€"electron interactions in multilayer epitaxial graphene grown on SiC using temperature-dependent Hall slope. Solid State Communications, 2016, 236, 41-44.	1.9	1
94	Unusual renormalization group (RG) flow and temperature-dependent phase transition in strongly-insulating monolayer epitaxial graphene. RSC Advances, 2017, 7, 31333-31337.	3.6	1
95	Epitaxial Graphene for High-Current QHE Resistance Standards. , 2018, , .		1
96	Transport of NIST Graphene Quantized Hall Devices and Comparison with AIST Gallium-Arsenide Quantized Hall Devices. , 2018, , .		1
97	Superconducting Contact Geometries for Next-Generation Quantized Hall Resistance Standards. , 2020, 1.633481E6, .		1
98	Abrikosov vortex corrections to effective magnetic field enhancement in epitaxial graphene. Physical Review B, 2021, 104, .	3.2	1
99	Desorption timescales on epitaxial graphene via Fermi level shifting and Reststrahlen monitoring. Carbon, 2022, 197, 350-358.	10.3	1
100	Development of low carrier density graphene devices. , 2014, , .		0
101	Weak localization and microwave-irradiated transport in multilayer epitaxial graphene grown on SiC. Materials Research Express, 2015, 2, 115002.	1.6	0
102	Millimeter-sized graphene quantum hall devices for resistance standards. , 2016, , .		0
103	Epitaxial Graphene p-n Junctions. , 2018, , .		0
104	Metrological Suitability of Functionalized Epitaxial Graphene. , 2020, 1, .		0
105	Development of gateless quantum Hall checkerboard pâ€"n junction devices. Journal Physics D: Applied Physics, 2020, 53, 345302.	2.8	0
106	Development of gateless quantum Hall checkerboard junction devices. Journal Physics D: Applied Physics, 2020, 53, .	2.8	0