Gyorgy Csaba

List of Publications by Year
in descending order

183 papers	5,288 citations

126907
33 h-index	

106344
65 g-index

186 all docs	186 docs citations

186 times ranked	3572 citing authors

#	Article	IF	Citations
1	Majority Logic Gate for Magnetic Quantum-Dot Cellular Automata. Science, 2006, 311, 205-208.	12.6	877
2	The 2021 Magnonics Roadmap. Journal of Physics Condensed Matter, 2021, 33, 413001.	1.8	287
3	Nanocomputing by field-coupled nanomagnets. IEEE Nanotechnology Magazine, 2002, 1, 209-213.	2.0	185
4	Perspectives of using spin waves for computing and signal processing. Physics Letters, Section A: General, Atomic and Solid State Physics, 2017, 381, 1471-1476.	2.1	171
5	The Bistable Ring PUF: A new architecture for strong Physical Unclonable Functions. , 2011, , .		156
6	Nanomagnet logic: progress toward system-level integration. Journal of Physics Condensed Matter, 2011, 23, 493202.	1.8	144
7	Coupled oscillators for computing: A review and perspective. Applied Physics Reviews, 2020, 7, .	11.3	143
8	Nanopatterning reconfigurable magnetic landscapes via thermally assisted scanning probe lithography. Nature Nanotechnology, 2016, 11, 545-551.	31.5	134
9	Roadmap on all-optical processing. Journal of Optics (United Kingdom), 2019, 21, 063001.	2.2	128
10	Coupled-Oscillator Associative Memory Array Operation for Pattern Recognition. IEEE Journal on Exploratory Solid-State Computational Devices and Circuits, 2015, 1, 85-93.	1.5	121
11	Magnetic Quantum-Dot Cellular Automata: Recent Developments and Prospects. Journal of Nanoelectronics and Optoelectronics, 2008, 3, 55-68.	0.5	102
12	Magnetic QCA systems. Microelectronics Journal, 2005, 36, 619-624.	2.0	99
13	Spin–orbit torque-assisted switching in magnetic insulator thin films with perpendicular magnetic anisotropy. Nature Communications, 2016, 7, 12688.	12.8	85
14	Nanoscale neural network using non-linear spin-wave interference. Nature Communications, 2021, 12, 6422.	12.8	81
15	Activity in field-coupled nanomagnet arrays. International Journal of Circuit Theory and Applications, 2007, 35, 281-293.	2.0	79
16	Majority Gate for Nanomagnetic Logic With Perpendicular Magnetic Anisotropy. IEEE Transactions on Magnetics, 2012, 48, 4336-4339.	2.1	77
17	Behavior of Nanomagnet Logic in the presence of thermal noise. , 2010, , .		68
18	Magnetization switching using topological surface states. Science Advances, 2019, 5, eaaw3415.	10.3	65

#	ARTICLE	IF	CITATIONS
19	A computing architecture composed of field-coupled single domain nanomagnets clocked by magnetic field. International Journal of Circuit Theory and Applications, 2003, 31, 67-82.	2.0	64
20	Experimental Demonstration of a 1-Bit Full Adder in Perpendicular Nanomagnetic Logic. IEEE Transactions on Magnetics, 2013, 49, 4464-4467.	2.1	61
21	Spin-wave based realization of optical computing primitives. Journal of Applied Physics, 2014, 115, .	2.5	61
22	Investigation of shape-dependent switching of coupled nanomagnets. Superlattices and Microstructures, 2003, 34, 513-518.	3.1	58
23	Majority logic gate for 3D magnetic computing. Nanotechnology, 2014, 25, 335202.	2.6	58
24	Simulation of Power Gain and Dissipation in Field-Coupled Nanomagnets. Journal of Computational Electronics, 2005, 4, 105-110.	2.5	57
25	Applications of High-Capacity Crossbar Memories in Cryptography. IEEE Nanotechnology Magazine, 2011, 10, 489-498.	2.0	57
26	Computing With Networks of Oscillatory Dynamical Systems. Proceedings of the IEEE, 2019, 107, 73-89.	21.3	57
27	Simulation of Field Coupled Computing Architectures Based on Magnetic Dot Arrays. Journal of Computational Electronics, 2002, 1, 87-91.	2.5	54
28	Experimental Realization of a Nanomagnet Full Adder Using Slanted-Edge Magnets. IEEE Transactions on Magnetics, 2013, 49, 4452-4455.	2.1	51
29	Computational Study of Spin-Torque Oscillator Interactions for Non-Boolean Computing Applications. IEEE Transactions on Magnetics, 2013, 49, 4447-4451.	2.1	47
30	Nanoscale spectrum analyzer based on spin-wave interference. Scientific Reports, 2017, 7, 9245.	3.3	46
31	Nanomagnetic Logic: Error-Free, Directed Signal Transmission by an Inverter Chain. IEEE Transactions on Magnetics, 2012, 48, 4332-4335.	2.1	44
32	Magnetic Ordering of Focused-Ion-Beam Structured Cobalt-Platinum Dots for Field-Coupled Computing. IEEE Nanotechnology Magazine, 2008, 7, 316-320.	2.0	43
33	Controlled reversal of Co/Pt Dots for nanomagnetic logic applications. Journal of Applied Physics, 2012, 111, 07A715.	2.5	40
34	Read-Out Design Rules for Molecular Crossbar Architectures. IEEE Nanotechnology Magazine, 2009, 8, 369-374.	2.0	38
35	Implementation of a nanomagnetic full adder circuit. , 2011, , .		37
36	Physical Implementation of Coherently Coupled Oscillator Networks. IEEE Journal on Exploratory Solid-State Computational Devices and Circuits, 2015, 1, 76-84.	1.5	33

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37	Towards a Signal Crossing in Double-Layer Nanomagnetic Logic. IEEE Transactions on Magnetics, 2013, 49, 4468-4471.	2.1	31
38	Systolic Pattern Matching Hardware With Out-of-Plane Nanomagnet Logic Devices. IEEE Nanotechnology Magazine, 2013, 12, 399-407.	2.0	31
39	Spin torque oscillator models for applications in associative memories. , 2012, , .		30
40	Field-coupled nanomagnets for interconnect-free nonvolatile computing. , 2009, , .		29
41	Signal crossing in perpendicular nanomagnetic logic. Journal of Applied Physics, 2014, 115, .	2.5	29
42	Conjugated 12 nm long oligomers as molecular wires in nanoelectronics. Journal of Materials Chemistry, 2009, 19, 3899.	6.7	28
43	Nanomagnetic Logic: Demonstration of directed signal flow for field-coupled computing devices. , 2011, , .		28
44	Neural network based on parametrically-pumped oscillators. , 2016, , .		27
45	1-Bit Full Adder in Perpendicular Nanomagnetic Logic using a Novel 5-Input Majority Gate. EPJ Web of Conferences, 2014, 75, 05001.	0.3	26
46	On-chip Extraordinary Hall-effect sensors for characterization of nanomagnetic logic devices. Solid-State Electronics, 2010, 54, 1027-1032.	1.4	25
47	Information transport in field-coupled nanomagnetic logic devices. Journal of Applied Physics, 2013, 113, 17B902.	2.5	25
48	Simulation of ZnO diodes for application in non-volatile crossbar memories. Journal of Computational Electronics, 2008, 7, 146-150.	2.5	24
49	Nanomagnet Logic from Partially Irradiated Co/Pt Nanomagnets. IEEE Nanotechnology Magazine, 2012, 11, 97-104.	2.0	24
50	Security Applications of Diodes with Unique Current-Voltage Characteristics. Lecture Notes in Computer Science, 2010, , 328-335.	1.3	24
51	Field-coupled computing in magnetic multilayers. Journal of Computational Electronics, 2008, 7, 454-457.	2.5	23
52	Towards on-chip clocking of perpendicular Nanomagnetic Logic. Solid-State Electronics, 2014, 102, 46-51.	1.4	23
53	Power dissipation in nanomagnetic logic devices. , 0, , .		22
54	Random pn-junctions for physical cryptography. Applied Physics Letters, 2010, 96, .	3.3	22

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55	Physical unclonable functions based on crossbar arrays for cryptographic applications. International Journal of Circuit Theory and Applications, 2013, 41, 619-633.	2.0	22
56	Low Temperature Rectifying Junctions for Crossbar Non-Volatile Memory Devices. , 2009, , .		21
57	Controlled domain wall motion in micron-scale permalloy square rings. Physica E: Low-Dimensional Systems and Nanostructures, 2003, 19, 240-245.	2.7	20
58	Switching behavior of lithographically fabricated nanomagnets for logic applications. Journal of Applied Physics, 2012, 111, 07B911.	2.5	19
59	Nanomagnetic logic clocked in the MHz regime. , 2013, , .		19
60	Characterization of nonlinear spin-wave interference by reservoir-computing metrics. Applied Physics Letters, 2021, 119, .	3.3	19
61	Nanomagnetic logic: compact modeling of field-coupled computing devices for system investigations. Journal of Computational Electronics, 2011, 10, 352-359.	2.5	18
62	Computing with Coupled Oscillators: Theory, Devices, and Applications. , 2018, , .		18
63	Clocking Schemes for Field Coupled Devices from Magnetic Multilayers. , 2009, , .		17
64	A monolithic 3D integrated nanomagnetic co-processing unit. Solid-State Electronics, 2016, 115, 74-80.	1.4	17
65	Towards Electrical, Integrated Implementations of SIMPL Systems. Lecture Notes in Computer Science, 2010, , 277-292.	1.3	17
66	Electrical input structures for nanomagnetic logic devices. Journal of Applied Physics, 2012, 111, 07E341.	2.5	16
67	Flux-Closure Magnetic States in Triangular Cobalt Ring Elements. IEEE Transactions on Magnetics, 2006, 42, 3641-3644.	2.1	15
68	Magnetic Properties of Enhanced Permeability Dielectrics for Nanomagnetic Logic Circuits. IEEE Transactions on Magnetics, 2012, 48, 3292-3295.	2.1	15
69	Simulation of Magnetization Reversal and Domain-Wall Trapping in Submicron Permalloy Wires With Different Wire Geometries. IEEE Nanotechnology Magazine, 2012, 11, 682-686.	2.0	15
70	An Associative Memory with oscillatory CNN arrays using spin torque oscillator cells and spin-wave interactions architecture and End-to-end Simulator. , 2012, , .		15
71	Modeling of coupled spin torque oscillators for applications in associative memories. , 2012, , .		15
72	Development of CAD tools for nanomagnetic logic devices. International Journal of Circuit Theory and Applications, 2013, 41, 634-645.	2.0	15

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73	Computing architecture composed of next-neighbour-coupled optically pumped nanodevices. International Journal of Circuit Theory and Applications, 2001, 29, 73-91.	2.0	14
74	Domain-Wall Assisted Switching of Single-Domain Nanomagnets. IEEE Transactions on Magnetics, 2012, 48, 3563-3566.	2.1	14
75	Synchronization in cellular spin torque oscillator arrays. , 2012, , .		14
76	Compensation of orange-peel coupling effect in magnetic tunnel junction free layer via shape engineering for nanomagnet logic applications. Journal of Applied Physics, 2014, 115, 17B902.	2.5	14
77	Linear Circuit Models for On-Chip Quantum Electrodynamics. IEEE Transactions on Microwave Theory and Techniques, 2011, 59, 65-71.	4.6	13
78	Clocking magnetic field-coupled devices by domain walls. Journal of Applied Physics, 2012, 111, 07E337.	2.5	13
79	Direct Measurement of Magnetic Coupling Between Nanomagnets for Nanomagnetic Logic Applications. IEEE Transactions on Magnetics, 2012, 48, 4402-4405.	2.1	13
80	Switching Behavior of Sharply Pointed Nanomagnets for Logic Applications. IEEE Transactions on Magnetics, 2013, 49, 3549-3552.	2.1	13
81	Hybrid yttrium iron garnet-ferromagnet structures for spin-wave devices. Journal of Applied Physics, 2015, 117, .	2.5	13
82	Speeding up nanomagnetic logic by DMI enhanced Pt/Co/Ir films. AIP Advances, 2018, 8, .	1.3	13
83	Experimental demonstration of a concave grating for spin waves in the Rowland arrangement. Scientific Reports, 2021, 11, 14239.	3.3	13
84	Controlled domain wall pinning in nanowires with perpendicular magnetic anisotropy by localized fringing fields. Journal of Applied Physics, 2014, 115, 17D506.	2.5	12
85	Compact modeling of perpendicular nanomagnetic logic based on threshold gates. Journal of Applied Physics, 2014, 115, 17D104.	2.5	11
86	Threshold Gate-Based Circuits From Nanomagnetic Logic. IEEE Nanotechnology Magazine, 2014, 13, 990-996.	2.0	11
87	Circuit modelling of coupling between nanosystems and microwave coplanar waveguides. International Journal of Circuit Theory and Applications, 2007, 35, 315-324.	2.0	10
88	Analysis of the hysteretic behavior of silicon nanowire transistors. Physica Status Solidi C: Current Topics in Solid State Physics, 2008, 5, 27-30.	0.8	10
89	Characterizing magnetic field-coupled computing devices by the Extraordinary Hall-effect. , 2009, , .		10
90	Programmable Input for Nanomagnetic Logic Devices. EPJ Web of Conferences, 2013, 40, 16007.	0.3	10

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91	Edge-Mode Resonance-Assisted Switching of Nanomagnet Logic Elements. IEEE Transactions on Magnetics, 2015, 51, 1-4.	2.1	10
92	Efficient electromagnetic transducers for spin-wave devices. Scientific Reports, 2021, 11, 18378.	3.3	10
93	Nanomagnet Logic (NML). Lecture Notes in Computer Science, 2014, , 21-32.	1.3	10
94	Field-coupled computing: Investigating the properties of ferromagnetic nanodots. Solid-State Electronics, 2011, 65-66, 240-245.	1.4	9
95	Exploring the Design of the Magnetic–Electrical Interface for Nanomagnet Logic. IEEE Nanotechnology Magazine, 2013, 12, 203-214.	2.0	9
96	Coherent precession in arrays of dipolar-coupled soft magnetic nanodots. Journal of Applied Physics, 2015, 117, .	2.5	9
97	Spin wave eigenmodes in single and coupled sub-150‰nm rectangular permalloy dots. Journal of Applied Physics, 2015, 117, 17A316.	2.5	9
98	Exchange coupling between laterally adjacent nanomagnets. Nanotechnology, 2016, 27, 395202.	2.6	9
99	Design of a CMOS integrated on-chip oscilloscope for spin wave characterization. AIP Advances, 2017, 7, .	1.3	9
100	Design of On-Chip Readout Circuitry for Spin-Wave Devices. IEEE Magnetics Letters, 2017, 8, 1-4.	1.1	9
101	Distance Computation Based on Coupled Spin-Torque Oscillators: Application to Image Processing. Physical Review Applied, 2020, 14, .	3.8	9
102	CIRCUIT-BASED APPROACHES TO SIMPL SYSTEMS. Journal of Circuits, Systems and Computers, 2011, 20, 107-123.	1.5	8
103	Boolean and non-boolean nearest neighbor architectures for out-of-plane nanomagnet logic. , 2012, , .		8
104	A Nanomagnet Logic Field-Coupled Electrical Input. IEEE Nanotechnology Magazine, 2013, 12, 734-742.	2.0	8
105	Non-boolean computing based on linear waves and oscillators. , 2015, , .		8
106	Error analysis for ultra dense nanomagnet logic circuits. Journal of Applied Physics, 2015, 117, .	2.5	8
107	Lens Design for Computing With Anisotropic Spin Waves. IEEE Magnetics Letters, 2018, 9, 1-5.	1.1	8
108	Simulation of coupled spin torque oscillators for pattern recognition. Journal of Applied Physics, 2018, 124, 152128.	2.5	8

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109	Waveguides as sources of short-wavelength spin waves for low-energy ICT applications. European Physical Journal B, 2018, 91, 1.	1.5	8
110	Investigation of antiferromagnetic ordering along chains of coupled nanomagnets. , 0, , .		7
111	Magnetic Quantum-Dot Cellular Automata (MQCA). , 2006, , 269-276.		7
112	The simulation of molecular and organic devices: a critical review and look at future developments. Applied Physics A: Materials Science and Processing, 2007, 87, 593-598.	2.3	7
113	Extraordinary Hall-effect sensor in split-current design for readout of magnetic field-coupled logic devices. , 2008, , .		7
114	Ultra-low volume ferromagnetic nanodots for field-coupled computing devices. , 2010, , .		7
115	Nanomagnet Fabrication Using Nanoimprint Lithography and Electrodeposition. IEEE Nanotechnology Magazine, 2013, 12, 547-552.	2.0	7
116	Nanomagnetic logic: from magnetic ordering to magnetic computing. , 2014, , 301-334.		7
117	Robustness of majority gates based on nanomagnet logic. Journal of Magnetism and Magnetic Materials, 2018, 460, 432-437.	2.3	7
118	Application of mesoscopic magnetic rings for logic devices. , 0, , .		6
119	Focused ion beam structured Co/Pt multilayers for field-coupled magnetic computing. Materials Research Society Symposia Proceedings, 2007, 998, 1.	0.1	6
120	Making non-volatile nanomagnet logic non-volatile. , 2012, , .		6
121	Minimum-energy state guided physical design for nanomagnet logic. , 2013, , .		6
122	Power reduction in nanomagnet logic using high-permeability dielectrics. Journal of Applied Physics, 2013, 113, 17B906.	2.5	6
123	Restoration of Magnetization Distributions from Joint Magnetic Force Microscopy Measurements and Micromagnetic Simulations. Journal of Computational Electronics, 2003, 2, 225-229.	2.5	5
124	Domain wall gate for magnetic logic and memory applications with perpendicular anisotropy. , 2013, , .		5
125	Spin-wave-based computing devices. , 2014, , .		5
126	Towards nonvolatile magnetic crossbar arrays: A three-dimensional-integrated field-coupled domain wall gate with perpendicular anisotropy. Journal of Applied Physics, 2015, 117, 17D507.	2.5	5

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127	Nanomagnet Logic: Computing by magnetic ordering. IEEE Nanotechnology Magazine, 2020, 14, 6-13.	1.3	5
128	Field-coupled nanomagnets for logic applications. , 2005, 5838, 162.		4
129	Development of a highly parallelized micromagnetic simulator on graphics processors. , 2010, , .		4
130	Error analysis of Co/Pt multilayer based Nanomagnetic Logic. , 2011, , .		4
131	Demonstration of Field-Coupled Input Scheme on Line of Nanomagnets. IEEE Transactions on Magnetics, 2013, 49, 4460-4463.	2.1	4
132	Closely spaced nanomagnets by dual e-beam exposure for low-energy nanomagnet logic. Journal of Applied Physics, 2013, 113, 17B904.	2.5	4
133	Nanomagnet Logic Gate With Programmable-Electrical Input. IEEE Transactions on Magnetics, 2014, 50, 1-4.	2.1	4
134	Domain-Wall-Assisted Switching of Chains of Coupled Nanomagnets. IEEE Transactions on Magnetics, 2014, 50, 1-4.	2.1	4
135	Low-power 3D integrated ferromagnetic computing. , 2015, , .		4
136	Nanomagnet Logic (NML). Lecture Notes in Computer Science, 2014, , 21-32.	1.3	4
137	Computational model of partially irradiated nanodots for field-coupled computing devices. , 2010, , .		3
138	Characterization of the bistable ring PUF. , 2012, , .		3
139	Design of a systolic pattern matcher for Nanomagnet Logic. , 2012, , .		3
140	Device-level compact modeling of perpendicular Nanomagnetic Logic for benchmarking purposes. , 2015, , .		3
141	Shape-Dependent Switching Behavior of Exchange-Coupled Nanomagnet Stacks. IEEE Transactions on Magnetics, 2016, 52, 1-5.	2.1	3
142	Study of switching behavior of exchange-coupled nanomagnets by transverse magnetization metrology. AIP Advances, 2017, 7, .	1.3	3
143	Design of a 40-nm CMOS integrated on-chip oscilloscope for 5-50 GHz spin wave characterization. AIP Advances, 2018, 8, 056001.	1.3	3
144	On the discrimination between nucleation and propagation in nanomagnetic logic devices. AIP Advances, 2018, 8, .	1.3	3

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145	Noise Immunity of Oscillatory Computing Devices. IEEE Journal on Exploratory Solid-State Computational Devices and Circuits, 2020, 6, 164-169.	1.5	3
146	Field-coupled devices for nanoelectronic integrated circuits. , 0, , .		2
147	THE ROLE OF FIELD COUPLING IN NANO-SCALE CELLULAR NONLINEAR NETWORKS. International Journal of Neural Systems, 2003, 13, 387-395.	5.2	2
148	Design and Simulation of Novel Architectures for Nanodevices. , 2007, , .		2
149	Micromagnetic simulation of current-driven domain wall propagation. Journal of Computational Electronics, 2007, 6, 121-124.	2.5	2
150	Circuit modeling of flux qubits interacting with superconducting waveguides. Journal of Computational Electronics, 2007, 6, 105-108.	2.5	2
151	Modeling of circuits and architectures for molecular electronics. Journal of Computational Electronics, 2009, 8, 410-426.	2.5	2
152	Towards nanomagnetic logic systems: A programmable arithmetic logic unit for systolic array-based computing (Invited). , 2015, , .		2
153	Optically-inspired computing based on spin waves. , 2016, , .		2
154	Experiment-based thermal micromagnetic simulations of the magnetization reversal for ns-range clocked nanomagnetic logic. AIP Advances, 2017, 7, 056625.	1.3	2
155	The role of field coupling in nano-scale cellular nonlinear networks. , 0, , .		1
156	Signal processing with coupled ferromagnetic dots. , 0, , .		1
157	Nanomagnetic logic: Investigations on field-coupled computing devices by experiment-based compact modeling. , 2011, , .		1
158	Computational study of domain-wall-induced switching of Co/Pt multilayer. , 2012, , .		1
159	Modeling interaction between Co/Pt nanomagnets and Permalloy domain wall for Nanomagnet Logic. , 2012, , .		1
160	Power reduction in nanomagnetic logic clocking through high permeability dielectrics. , 2012, , .		1
161	Domain wall assisted ordering of coupled nanomagnets. Journal of Applied Physics, 2014, 115, 17D510.	2.5	1
162	Cellular Automata designs for out of plane Nanomagnet Logic. , 2014, , .		1

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163	Holographic algorithms for on-chip, non-boolean computing. , 2014, , .		1
164	Contiguous clock lines for pipelined nanomagnet logic. Journal of Computational Electronics, 2014, 13, 763-768.	2.5	1
165	Dynamic coupling of spin torque oscillators for associative memories. , 2014, , .		1
166	Analog circuits based on the synchronization of field-line coupled spin-torque oscillators. , 2015, , .		1
167	Fabrication of pseudo-spin-valve giant magnetoresistance arrays for nanomagnet logic by liftoff and the snow-jet process. Journal of Vacuum Science and Technology B:Nanotechnology and Microelectronics, 2015, 33, 022801.	1.2	1
168	A differential inverter-based switched-capacitor oscillator in 65 nm CMOS technology. , 2015, , .		1
169	Design of an ultra-wideband low-noise amplifier for spin wave readout circuitry in 65 nm CMOS technology. , 2016, , .		1
170	Simulation of molecular devices and architectures: state of the art and future challenges (Invited) Tj ETQq0 0 0 rgBT /Overlock 10 Tf 50 4		0
171	Magnetic Logic based on Field-Coupled Nanomagnets. , 2007, , .		0
172	Magnetic excitations for information processing. , 2010, , .		0
173	FPGA-implementation of a holographic pattern-matching algorithm. , 2013, , .		0
174	Nanomagnetic logic devices fabrication using nanoimprint lithography. , 2013, , .		0
175	Signal processing with optically-inspired algorithms. , 2014, , .		0
176	FPGA-based simulation of 3D light propagation. , 2014, , .		0
177	Short-wavelength spin-wave generation by a microstrip line. , 2015, , .		0
178	Emulating massively parallel non-Boolean operators on FPGA. , 2015, , .		0
179	Ferromagnetic resonance modes of nanomagnetic logic elements. , 2015, , .		0
180	Simulation of Coplanar Devices Accessing Nano Systems. Springer Proceedings in Physics, 2008, , 361-374.	0.2	0

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181	Implementation of a Nanomagnet Full Adder Circuit. , 2017, , 765-777.		0
182	Comparing Different PC and FPGA Implementation Possibilities of Fast Multipole Method. , 2021, , .		0
183	Nanomagnetic Logic: From Devices toÂSystems. Computer Architecture and Design Methodologies, 2023, , 107-143.	0.8	0