Ruben Specogna

List of Publications by Year
in descending order

143 papers	1,076 citations	471509 17 h-index	552781 26 g-index
144 all docs	144 docs citations	144 times ranked	531 citing authors

#	Article	IF	Citations
1	Modeling of epoxy resin spacers for the 1 MV DC gas insulated line of ITER neutral beam injector system. IEEE Transactions on Dielectrics and Electrical Insulation, 2009, 16, 77-87.	2.9	82
2	A new set of basis functions for the discrete geometric approach. Journal of Computational Physics, 2010, 229, 7401-7410.	3.8	61
3	Symmetric Positive-Definite Constitutive Matrices for Discrete Eddy-Current Problems. IEEE Transactions on Magnetics, 2007, 43, 510-515.	2.1	41
4	Discrete constitutive equations in A-/spl chi/ geometric eddy-current formulation. IEEE Transactions on Magnetics, 2005, 41, 1259-1263.	2.1	36
5	Stabilization of negative capacitance in ferroelectric capacitors with and without a metal interlayer. Nanoscale, 2020, 12, 6121-6129.	5.6	34
6	Physics inspired algorithms for (co)homology computations of three-dimensional combinatorial manifolds with boundary. Computer Physics Communications, 2013, 184, 2257-2266.	7.5	31
7	Automatic generation of cuts on large-sized meshes for the T–Ω geometric eddy-current formulation. Computer Methods in Applied Mechanics and Engineering, 2009, 198, 3765-3781.	6.6	29
8	Base functions and discrete constitutive relations for staggered polyhedral grids. Computer Methods in Applied Mechanics and Engineering, 2009, 198, 1117-1123.	6.6	26
9	An a posteriori-driven adaptive Mixed High-Order method with application to electrostatics. Journal of Computational Physics, 2016, 326, 35-55.	3.8	23
10	A Volume Integral Formulation for Solving Eddy Current Problems on Polyhedral Meshes. IEEE Transactions on Magnetics, 2017, 53, 1-4.	2.1	23
11	Complementary geometric formulations for electrostatics. International Journal for Numerical Methods in Engineering, 2011, 86, 1041-1068.	2.8	22
12	Extraction of VLSI Multiconductor Transmission Line Parameters by Complementarity. IEEE Transactions on Very Large Scale Integration (VLSI) Systems, 2014, 22, 146-154.	3.1	22
13	Cohomology in 3D Magneto-Quasistatics Modeling. Communications in Computational Physics, 2013, 14, 48-76.	1.7	21
14	A Boundary Integral Method for Computing Eddy Currents in Thin Conductors of Arbitrary Topology. IEEE Transactions on Magnetics, 2015, 51, 1-4.	2.1	21
15	Multi-frequency identification of defects in conducting media. Inverse Problems, 2008, 24, 035011.	2.0	20
16	Lazy Cohomology Generators: A Breakthrough in (Co)homology Computations for CEM. IEEE Transactions on Magnetics, 2014, 50, 577-580.	2.1	18
17	Critical Analysis of the Spanning Tree Techniques. SIAM Journal on Numerical Analysis, 2010, 48, 1601-1624.	2.3	17
18	Image Reconstruction of Defects in Metallic Plates Using a Multifrequency Detector System and a Discrete Geometric Approach. IEEE Transactions on Magnetics, 2007, 43, 1857-1860.	2.1	15

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19	Geometric *T*–Φ approach to solve eddy currents coupled to electric circuits. International Journal for Numerical Methods in Engineering, 2008, 74, 101-115.	2.8	15
20	Electroquasistatic Analysis of the Gas Insulated Line for the ITER Neutral Beam Injector. IEEE Transactions on Magnetics, 2009, 45, 996-999.	2.1	15
21	Sparsification of BEM Matrices for Large-Scale Eddy Current Problems. IEEE Transactions on Magnetics, 2016, 52, 1-4.	2.1	14
22	Optimized cycle basis in volume integral formulations for large scale eddy-current problems. Computer Physics Communications, 2021, 265, 108004.	7.5	14
23	The insulation structure of the 1MV transmission line for the ITER neutral beam injector. Fusion Engineering and Design, 2007, 82, 836-844.	1.9	13
24	Efficient generalized source field computation for *h*-oriented magnetostatic formulations. EPJ Applied Physics, 2011, 53, 20801.	0.7	13
25	Voltage holding optimization of the MITICA electrostatic accelerator. Fusion Engineering and Design, 2013, 88, 1038-1041.	1.9	12
26	Computation of stationary 3D halo currents in fusion devices with accuracy control. Journal of Computational Physics, 2014, 273, 100-117.	3.8	12
27	One Stroke Complementarity for Poisson-Like Problems. IEEE Transactions on Magnetics, 2015, 51, 1-4.	2.1	12
28	Modeling and Design of FTJs as Multi-Level Low Energy Memristors for Neuromorphic Computing. IEEE Journal of the Electron Devices Society, 2021, 9, 1202-1209.	2.1	12
29	Calculation of 3-D Magnetic Fields Produced by MHD Active Control Systems in Fusion Devices. IEEE Transactions on Magnetics, 2014, 50, 45-48.	2.1	11
30	Numerical–Experimental Benchmarking of a Probabilistic Code for Prediction of Voltage Holding in High Vacuum. IEEE Transactions on Plasma Science, 2018, 46, 1580-1586.	1.3	11
31	Electrical Impedance Spectroscopy on flowing blood to predict white thrombus formation in artificial microchannels. , 2012, , .		10
32	A Fast and Efficient Simulation Method for Inductive Position Sensors Design. , 2019, , .		10
33	Analysis methodologies and experimental benchmarks for eddy current testing. IEEE Transactions on Magnetics, 2005, 41, 1380-1383.	2.1	9
34	Design Optimization of Waveguide Bends in Photonic Crystals. IEEE Transactions on Magnetics, 2009, 45, 1630-1633.	2.1	9
35	Discrete Geometric Formulation of Admittance Boundary Conditions for Frequency Domain Problems Over Tetrahedral Dual Grids. IEEE Transactions on Antennas and Propagation, 2012, 60, 3998-4002.	5.1	9
36	A Discrete Geometric Approach to Cell Membrane and Electrode Contact Impedance Modeling. IEEE Transactions on Biomedical Engineering, 2012, 59, 2619-2627.	4.2	9

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37	Improved surface-roughness scattering and mobility models for multi-gate FETs with arbitrary cross-section and biasing scheme. Journal of Applied Physics, 2017, 121, .	2.5	9
38	Static Behavior Prediction of Microelectrostatic Actuators by Discrete Geometric Approaches. IEEE Transactions on Magnetics, 2008, 44, 1606-1609.	2.1	8
39	Measurement bench for Impedance Tomography during hemostasis process in whole blood. , 2011, , .		8
40	A novel technique for cohomology computations in engineering practice. Computer Methods in Applied Mechanics and Engineering, 2013, 253, 530-542.	6.6	8
41	Topology Preserving Thinning of Cell Complexes. IEEE Transactions on Image Processing, 2014, 23, 4486-4495.	9.8	8
42	T – Ω Formulation for Eddy-Current Problems with Periodic Boundary Conditions. IEEE Transactions on Magnetics, 2017, 53, 1-4.	2.1	8
43	Modeling of the magnetic field errors of RFX-mod upgrade. Fusion Engineering and Design, 2017, 123, 518-521.	1.9	8
44	Novel FDTD Technique Over Tetrahedral Grids for Conductive Media. IEEE Transactions on Antennas and Propagation, 2018, 66, 5387-5396.	5.1	8
45	Constitutive Matrices Using Hexahedra in a Discrete Approach for Eddy Currents. IEEE Transactions on Magnetics, 2008, 44, 694-697.	2.1	7
46	A geometric integral formulation for eddy‐currents. International Journal for Numerical Methods in Engineering, 2010, 82, 1720-1736.	2.8	7
47	A discrete geometric approach to solving time independent Schrödinger equation. Journal of Computational Physics, 2011, 230, 1370-1381.	3.8	7
48	Comparison Between Pseudospectral and Discrete Geometric Methods for Modeling Quantization Effects in Nanoscale Electron Devices. IEEE Transactions on Magnetics, 2012, 48, 203-206.	2.1	7
49	Numerical modeling of 3D halo current path in ITER structures. Fusion Engineering and Design, 2013, 88, 529-532.	1.9	7
50	Diagonal Discrete Hodge Operators for Simplicial Meshes Using the Signed Dual Complex. IEEE Transactions on Magnetics, 2015, 51, 1-4.	2.1	7
51	Plane Wave Excitation for Frequency Domain Electromagnetic Problems by Means of Impedance Boundary Condition. IEEE Transactions on Magnetics, 2015, 51, 1-4.	2.1	7
52	Impedance biosensor for real-time monitoring and prediction of thrombotic individual profile in flowing blood. PLoS ONE, 2017, 12, e0184941.	2.5	7
53	Coupling between circuits and a-/spl chi/ discrete geometric approach. IEEE Transactions on Magnetics, 2006, 42, 1043-1046.	2.1	6
54	Voltage and Current Sources for Massive Conductors Suitable With the $A\{hbox\{-\}\}chi$ Geometric Eddy-Current Formulation. IEEE Transactions on Magnetics, 2010, 46, 3069-3072.	2.1	6

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55	Combined Electro-Optical Imaging for the Time Evolution of White Thrombus Growth in Artificial Capillaries. IEEE Transactions on Instrumentation and Measurement, 2013, 62, 2954-2959.	4.7	6
56	A Novel Inversion Technique for Imaging Thrombus Volume in Microchannels Fusing Optical and Impedance Data. IEEE Transactions on Magnetics, 2014, 50, 1021-1024.	2.1	6
57	GPU Accelerated Time-Domain Discrete Geometric Approach Method for Maxwellâ€™s Equations on Tetrahedral Grids. IEEE Transactions on Magnetics, 2018, 54, 1-4.	2.1	6
58	Foundations of volume integral methods for eddy current problems. Computer Methods in Applied Mechanics and Engineering, 2022, 392, 114626.	6.6	6
59	Design Optimization of PCB-Based Rotary-Inductive Position Sensors. Sensors, 2022, 22, 4683.	3.8	6
60	Reinterpretation of the Nodal Force Method Within Discrete Geometric Approaches. IEEE Transactions on Magnetics, 2008, 44, 690-693.	2.1	5
61	Eddy-Currents Computation With T-$Omega$ Discrete Geometric Formulation for an NDE Problem. IEEE Transactions on Magnetics, 2008, 44, 698-701.	2.1	5
62	Discrete geometric approach for modelling quantization effects in nanoscale electron devices. Journal of Computational Electronics, 2014, 13, 287-299.	2.5	5
63	Three-dimensional analysis of JT-60SA conducting structures in view of RWM control. Fusion Engineering and Design, 2015, 96-97, 659-663.	1.9	5
64	Uncertainty model of electro-optical thrombus growth estimation for early risk detection. Measurement: Journal of the International Measurement Confederation, 2016, 79, 260-266.	5.0	5
65	Modelling and design of FTJs as high reading-impedance synaptic devices. , 2021, , .		5
66	A /spl theta/-method for eddy currents in time-domain with a discrete geometric approach. IEEE Transactions on Magnetics, 2006, 42, 779-782.	2.1	4
67	Optimal Cohomology Generators for 2-D Eddy-Current Problems in Linear Time. IEEE Transactions on Magnetics, 2013, 49, 1299-1304.	2.1	4
68	Ex vivo Time Evolution of Thrombus Growth through Optical and Electrical Impedance data fusion. Journal of Physics: Conference Series, 2013, 459, 012016.	0.4	4
69	Efficient Construction of 2-Chains with a Prescribed Boundary. SIAM Journal on Numerical Analysis, 2017, 55, 1159-1187.	2.3	4
70	The Time-Domain Cell Method Is a Coupling of Two Explicit Discontinuous Galerkin Schemes With Continuous Fluxes. IEEE Transactions on Magnetics, 2020, 56, 1-4.	2.1	4
71	Subgridding to Solving Magnetostatics Within Discrete Geometric Approach. IEEE Transactions on Magnetics, 2009, 45, 1024-1027.	2.1	3
72	Advanced geometric formulations for the design of a long defects detection system. Nondestructive Testing and Evaluation, 2009, 24, 195-207.	2.1	3

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73	Constitutive Relations for Discrete Geometric Approach Over Hexahedral Grids. IEEE Transactions on Magnetics, 2010, 46, 3077-3080.	2.1	3
74	A Perturbation Method for the $T-Omega$ Geometric Eddy-Current Formulation. IEEE Transactions on Magnetics, 2010, 46, 3045-3048.	2.1	3
75	A Discrete Geometric Approach to Solving 2-D Non-Linear Magnetostatic Problems. IEEE Transactions on Magnetics, 2010, 46, 3049-3052.	2.1	3
76	Time-Domain Geometric Eddy-Current A Formulation for Hexahedral Grids. IEEE Transactions on Magnetics, 2010, 46, 3301-3304.	2.1	3
77	A Novel Tool for Breakdown Probability Predictions on Multi-Electrode Multi-Voltage Systems. IEEE Transactions on Magnetics, 2014, 50, 93-96.	2.1	3
78	Advanced Computational Tools for the Characterization of the Dynamic Response of MHD Control Systems in Large Fusion Devices. IEEE Transactions on Magnetics, 2015, 51, 1-5.	2.1	3
79	A novel approach for solving three dimensional eddy current problems in fusion devices. Fusion Engineering and Design, 2015, 96-97, 703-706.	1.9	3
80	Geometrically defined basis functions for polyhedral elements with applications to computational electromagnetics. ESAIM: Mathematical Modelling and Numerical Analysis, 2016, 50, 677-698.	1.9	3
81	Computation of Relative 1-Cohomology Generators From a 1-Homology Basis for Eddy Currents Boundary Integral Formulations. IEEE Transactions on Magnetics, 2016, 52, 1-6.	2.1	3
82	An Arbitrary-Order Discontinuous Skeletal Method for Solving Electrostatics on General Polyhedral Meshes. IEEE Transactions on Magnetics, 2017, 53, 1-4.	2.1	3
83	Prediction of lightning impulse voltage induced breakdown in vacuum interrupters. IEEE Transactions on Dielectrics and Electrical Insulation, 2017, 24, 3367-3373.	2.9	3
84	Coupling Volume and Surface Integral Formulations for Eddy-Current Problems on General Meshes. IEEE Transactions on Magnetics, 2018, 54, 1-4.	2.1	3
85	Iterative Solution of Eddy Current Problems on Polyhedral Meshes. IEEE Transactions on Magnetics, 2018, 54, 1-4.	2.1	3
86	Novel Geometrically Defined Mass Matrices for Tetrahedral Meshes. IEEE Transactions on Magnetics, 2019, 55, 1-4.	2.1	3
87	Estimating the Volume of Unknown Inclusions in an Electrically Conducting Body with Voltage Measurements. Sensors, 2019, 19, 637.	3.8	3
88	Optimization of RFX-mod2 gap configuration by estimating the magnetic error fields due to the passive structure currents. Fusion Engineering and Design, 2019, 146, 680-683.	1.9	3
89	Cyclic Symmetry in Volume Integral Formulations for Eddy Currents: Cohomology Computation and Gauging. IEEE Transactions on Magnetics, 2020, 56, 1-4.	2.1	3
90	The role of the dual grid in low-order compatible numerical schemes on general meshes. Journal of Computational Physics, 2021, 436, 110285.	3.8	3

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91	Constitutive matrices using hexahedra in a discrete approach for eddy currents. , 0, , .		2
92	The discrete geometric approach for wave propagation problems. , 2009, , .		2
93	Modeling Current Density Distribution Inside Proton-Exchange Membrane Fuel Cells. IEEE Transactions on Magnetics, 2012, 48, 699-702.	2.1	2
94	Lazy Cohomology Generators Enable the Use of Complementarity for Computing Halo Current Resistive Distribution in Fusion Reactors. IEEE Transactions on Magnetics, 2014, 50, 489-492.	2.1	2
95	Numerical modelling of electromagnetic loads on fusion device structures. Journal of Physics: Conference Series, 2014, 490, 012078.	0.4	2
96	A boundary element method for eddy-current problems in fusion devices. Fusion Engineering and Design, 2015, 96-97, 620-623.	1.9	2
97	Fast Computation of Cuts With Reduced Support by Solving Maximum Circulation Problems. IEEE Transactions on Magnetics, 2015, 51, 1-4.	2.1	2
98	Complementary Discrete Geometric <inline-formula> <tex-math notation="LaTeX">h </tex-math> </inline-formula>-Field Formulation for Wave Propagation Problems. IEEE Transactions on Magnetics, 2016, 52, 1-4.	2.1	2
99	Lean Complementarity for Poisson Problems. IEEE Transactions on Magnetics, 2016, 52, 1-4.	2.1	2
100	Excitation by Scattering/Total Field Decomposition and Uniaxial PML in the Geometric Formulation. IEEE Transactions on Magnetics, 2016, 52, 1-4.	2.1	2
101	Topoprocessor: An Efficient Computational Topology Toolbox for <italic>h</italic>-Oriented Eddy Current Formulations. IEEE Transactions on Magnetics, 2017, 53, 1-4.	2.1	2
102	Adaptivity Based on the Constitutive Error for the Maxwellâ€™s Eigenvalue Problem on Polyhedral Meshes. IEEE Transactions on Magnetics, 2017, 53, 1-4.	2.1	2
103	Goal-Oriented Adaptivity for Voltage Breakdown Prediction. IEEE Transactions on Magnetics, 2018, 54, 1-4.	2.1	2
104	Lean Cohomology Computation for Electromagnetic Modeling. IEEE Transactions on Magnetics, 2018, 54, 1-4.	2.1	2
105	Exploiting Cyclic Symmetry in Stream Function-Based Boundary Integral Formulations. IEEE Transactions on Magnetics, 2019, 55, 1-4.	2.1	2
106	Fast Iterative Schemes for the Solution of Eddy-Current Problems Featuring Multiple Conductors by Integral Formulations. IEEE Transactions on Magnetics, 2020, 56, 1-4.	2.1	2
107	Explicit geometric construction of sparse inverse mass matrices for arbitrary tetrahedral grids. Computer Methods in Applied Mechanics and Engineering, 2021, 377, 113699.	6.6	2
108	Fast Computation of Eddy Currents for Multiple Conductors. IEEE Transactions on Magnetics, 2022, 58, 1-4.	2.1	2

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109	Voltage sources in a âˆˆÏ‡discrete geometric approach to eddy-currents. EPJ Applied Physics, 2006, 33, 97-101.	0.7	1
110	A geometric approach for wave propagation in 2-D photonic crystals in the frequency domain. IEEE Transactions on Magnetics, 2006, 42, 827-830.	2.1	1
111	Feasibility Studies for the Detection of Long Defects in Hot Rods. , 0, , .		1
112	A novel apparatus for the volume estimation of in vitro thrombus growth. , 2014, , .		1
113	A discrete geometric formulation for eddy-current problems in fusion devices. Journal of Physics: Conference Series, 2014, 490, 012077.	0.4	1
114	A volume integral formulation for solving eddy current problems on polyhedral meshes. , 2016, , .		1
115	Modeling of Anechoic Chambers With Equivalent Materials and Equivalent Sources. IEEE Transactions on Electromagnetic Compatibility, 2016, 58, 956-963.	2.2	1
116	T-Î© formulation for eddy current problems with periodic boundary conditions. , 2016, , .		1
117	A Boundary Integral Method for Computing Eddy Currents in Non-Manifold Thin Conductors. IEEE Transactions on Magnetics, 2016, 52, 1-4.	2.1	1
118	A Geometric Frequency-Domain Wave Propagation Formulation for Fast Convergence of Iterative Solvers. IEEE Transactions on Magnetics, 2017, 53, 1-4.	2.1	1
119	3D electromagnetic analysis of the MHD control system in RFX-mod upgrade. Fusion Engineering and Design, 2017, 123, 612-615.	1.9	1
120	Diagonal Material Matrices for Arbitrary Simplicial Meshes for Solving Poisson Problems With One Unknown Per Element. IEEE Transactions on Magnetics, 2020, 56, 1-4.	2.1	1
121	Detailed Circuit Modelling of phone charging wireless power transfer. , 2021, , .		1
122	Mirror Symmetry in Integral Formulations for Eddy Currents. IEEE Transactions on Magnetics, 2021, 57, 1-4.	2.1	1
123	Inverting the discrete curl operator: A novel graph algorithm to find a vector potential of a given vector field. Journal of Computational Physics, 2022, 466, 111404.	3.8	1
124	Image Reconstruction of Defects in Metallic Plates Using a Multi-Frequency Detector System and a Discrete Geometric Approach. , 0, , .		0
125	A nonâ€destructive testing application solved with <i>A</i>â€<i>Ï‡</i> geometric eddyâ€current formulation. COMPEL - the International Journal for Computation and Mathematics in Electrical and Electronic Engineering, 2010, 29, 1606-1615.	0.9	0
126	A perturbation method for the<i>A</i>-<i>Ï‡</i>geometric eddy-current formulation. EPJ Applied Physics, 2010, 52, 23309.	0.7	0

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127	Discrete Geometric Approach for the Three-Dimensional Schrödinger Problem and Comparison With Finite Elements. IEEE Transactions on Magnetics, 2014, 50, 189-192.	2.1	0
128	A geometric frequency-domain wave propagation formulation for fast convergence of iterative solvers. , 2016, , .		0
129	Adaptivity based on the constitutive error for the Maxwell's eigenvalue problem on polyhedral meshes. , 2016, , .		0
130	An arbitrary-order discontinuous skeletal method for solving electrostatics on general polyhedral meshes. , 2016, , .		0
131	T-Ω formulation with higher order hierarchical basis functions for non simply connected conductors. , 2016, , .		0
132	Topoprocessor: An efficient computational topology toolbox for h-oriented eddy current formulations. , 2016, , .		0
133	A comparative performance analysis of time-domain formulations for wave propagation problems. , 2016, , .		0
134	Fast Frequency and Material Properties Sweeps for Quasi-Static Problems. IEEE Transactions on Magnetics, 2016, 52, 1-4.	2.1	0
135	Efficient construction of 2-chains representing a basis of H2(Ω̄,∂Ω;ℤ)$H_{2}(overline {Omega }, partial) Tj ETQq1 1 0.784314 rg	1.6	0
136	<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" id="M1"><mml:mrow><mml:mi>T</mml:mi></mml:mrow></mml:math>-<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" id="M2"><mml:mrow><mml:mi>Ω</mml:mi></mml:mrow></mml:math> Formulation with Higher-Order Hierarchical Basis Functions for Nonsimply Connected Conductors. Mathematical Problems in Engineering, 2018, 2018, 1-8.	1.1	0
137	Fake Conductivity or Cohomology: Which to Use When Solving Eddy Current Problems With h-Formulations?. IEEE Transactions on Magnetics, 2019, 55, 1-4.	2.1	0
138	Novel sensor to measure the volume of growth for in vitro bioassays. , 2019, , .		0
139	A Novel Mixed-Hybrid Formulation for Magnetostatics. IEEE Transactions on Magnetics, 2020, 56, 1-4.	2.1	0
140	New Magic Formula Demonstration Shows Unexpected Features of Geometrically Defined Matrices for Polyhedral Grids. IEEE Transactions on Magnetics, 2021, 57, 1-4.	2.1	0
141	Interaction of Tearing Modes With Passive Structures in a Tokamak. IEEE Transactions on Magnetics, 2021, 57, 1-4.	2.1	0
142	Error Fields' Computation in the RFX-mod2 Reversed Field Pinch. IEEE Transactions on Magnetics, 2021, 57, 1-4.	2.1	0
143	A new method for accurate platelet thrombi volume measurement using a confocal microscope. Acta IMEKO (2012), 2019, 8, 48.	0.7	0