

Ralph C Smith

List of Publications by Year in descending order

Source: <https://exaly.com/author-pdf/1165430/publications.pdf>

Version: 2024-02-01

150
papers

2,232
citations

279798

23
h-index

315739

38
g-index

162
all docs

162
docs citations

162
times ranked

1254
citing authors

#	ARTICLE	IF	CITATIONS
1	The maximum entropy method for data fusion and uncertainty quantification in multifunctional materials and structures. <i>Journal of Intelligent Material Systems and Structures</i> , 2022, 33, 1182-1197.	2.5	4
2	Radiation Source Localization Using Surrogate Models Constructed from 3-D Monte Carlo Transport Physics Simulations. <i>Nuclear Technology</i> , 2021, 207, 37-53.	1.2	9
3	Bayesian inference and uncertainty propagation using efficient fractional-order viscoelastic models for dielectric elastomers. <i>Journal of Intelligent Material Systems and Structures</i> , 2021, 32, 486-496.	2.5	1
4	SURROGATE BASED MUTUAL INFORMATION APPROXIMATION AND OPTIMIZATION FOR URBAN SOURCE LOCALIZATION. , 2021, 11, 39-55.		0
5	Uncertainty Quantification and Sensitivity Analysis of Partial Charges on Macroscopic Solvent Properties in Molecular Dynamics Simulations with a Machine Learning Model. <i>Journal of Chemical Information and Modeling</i> , 2021, 61, 1745-1761.	5.4	2
6	Modeling and Parameter Subset Selection for Fibrin Polymerization Kinetics with Applications to Wound Healing. <i>Bulletin of Mathematical Biology</i> , 2021, 83, 47.	1.9	1
7	A hierarchical Bayesian model for background variation in radiation source localization. <i>Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment</i> , 2021, 1002, 165288.	1.6	2
8	Variance-based sensitivity analysis for time-dependent processes. <i>Reliability Engineering and System Safety</i> , 2020, 196, 106722.	8.9	29
9	Algorithms in Diffraction Profile Analysis. , 2020, , 501-539.		0
10	A Mutual Information-Based Experimental Design Framework to Use High-Fidelity Nuclear Reactor Codes to Calibrate Low-Fidelity Codes. <i>Nuclear Technology</i> , 2019, 205, 1685-1696.	1.2	2
11	Surrogate-Based Robust Design for a Non-Smooth Radiation Source Detection Problem. <i>Algorithms</i> , 2019, 12, 113.	2.1	1
12	Sequential optimal positioning of mobile sensors using mutual information. <i>Statistical Analysis and Data Mining</i> , 2019, 12, 465-478.	2.8	7
13	Active subspace analysis and uncertainty quantification for a polydomain ferroelectric phase-field model. <i>Journal of Intelligent Material Systems and Structures</i> , 2019, 30, 2027-2051.	2.5	4
14	Gradient-Free Construction of Active Subspaces for Dimension Reduction in Complex Models with Applications to Neutronics. <i>SIAM-ASA Journal on Uncertainty Quantification</i> , 2019, 7, 117-142.	2.0	11
15	Uncertainty quantification of two-phase flow and boiling heat transfer simulations through a data-driven modular Bayesian approach. <i>International Journal of Heat and Mass Transfer</i> , 2019, 138, 1096-1116.	4.8	29
16	Derivative-Based Global Sensitivity Analysis for Models with High-Dimensional Inputs and Functional Outputs. <i>SIAM Journal of Scientific Computing</i> , 2019, 41, A3524-A3551.	2.8	7
17	Application and Evaluation of Surrogate Models for Radiation Source Search. <i>Algorithms</i> , 2019, 12, 269.	2.1	4
18	Parameter subset selection techniques for problems in mathematical biology. <i>Biological Cybernetics</i> , 2019, 113, 121-138.	1.3	13

#	ARTICLE	IF	CITATIONS
19	Model Input and Output Dimension Reduction Using Karhunen-Loève Expansions With Application to Biotransport. ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part B: Mechanical Engineering, 2019, 5, .	1.1	2
20	Global sensitivity analysis of fractional-order viscoelasticity models. , 2019, , .		2
21	Parameter-dependent surrogate model development for PZT bimorph actuators employed for micro-air vehicles. , 2019, , .		1
22	The use of Bayesian inference in the characterization of materials and thin films. Acta Crystallographica Section A: Foundations and Advances, 2019, 75, a209-a209.	0.1	0
23	Forecasting and Uncertainty Quantification Using a Hybrid of Mechanistic and Non-mechanistic Models for an Age-Structured Population Model. Bulletin of Mathematical Biology, 2018, 80, 1578-1595.	1.9	9
24	Bayesian model calibration and uncertainty quantification for an HIV model using adaptive Metropolis algorithms. Inverse Problems in Science and Engineering, 2018, 26, 233-256.	1.2	5
25	Numerical Techniques to Model Fractional-Order Nonlinear Viscoelasticity in Soft Elastomers. , 2018, , .		1
26	Bayesian Approaches to Uncertainty Quantification and Structure Refinement from X-Ray Diffraction. Springer Series in Materials Science, 2018, , 81-102.	0.6	0
27	A Probabilistic Subspace Bound with Application to Active Subspaces. SIAM Journal on Matrix Analysis and Applications, 2018, 39, 1208-1220.	1.4	7
28	Automated Defect Detection in Spent Nuclear Fuel Using Combined Cerenkov Radiation and Gamma Emission Tomography Data. Nuclear Technology, 2018, 204, 343-353.	1.2	3
29	Analysis of a multi-axial quantum-informed ferroelectric continuum model: Part 2 – sensitivity analysis. Journal of Intelligent Material Systems and Structures, 2018, 29, 2840-2860.	2.5	8
30	Analysis of a multi-axial quantum informed ferroelectric continuum model: Part 1 – uncertainty quantification. Journal of Intelligent Material Systems and Structures, 2018, 29, 2823-2839.	2.5	5
31	Uncertainty quantification for PZT bimorph actuators. , 2018, , .		1
32	Uncertainty-enabled design of electromagnetic reflectors with integrated shape control. , 2018, , .		0
33	Active subspace uncertainty quantification for a polydomain ferroelectric phase-field model. , 2018, , .		1
34	A Bayesian approach to modeling diffraction profiles and application to ferroelectric materials. Journal of Applied Crystallography, 2017, 50, 211-220.	4.5	4
35	Global sensitivity analysis for a quantum informed ferroelectric phase field model. Proceedings of SPIE, 2017, , .	0.8	0
36	Surrogate model development and feedforward control implementation for PZT bimorph actuators employed for robobee. , 2017, , .		1

#	ARTICLE	IF	CITATIONS
37	A Linear Regression Framework for the Verification of Bayesian Model Calibration Algorithms. Journal of Verification, Validation and Uncertainty Quantification, 2017, 2, .	0.4	0
38	Hybrid optimization and Bayesian inference techniques for a non-smooth radiation detection problem. International Journal for Numerical Methods in Engineering, 2017, 111, 955-982.	2.8	11
39	Identifiability and Active Subspace Analysis for a Polydomain Ferroelectric Phase Field Model. , 2017, , .		2
40	A Maximum Entropy Approach for Uncertainty Quantification and Analysis of Multifunctional Materials. , 2017, , .		2
41	Uncertainty Analysis of Ferroelectric Polydomain Structures. , 2017, , .		2
42	Uncertainty analysis of continuum phase field modeling in 180° degree domain wall structures. , 2017, , .		1
43	A Multi-Axial Electromechanically-Coupled Homogenized Energy Model for Ferroelectric Materials. , 2017, , .		0
44	Data-Driven Model Development and Feedback Control Design for PZT Bimorph Actuators. , 2017, , .		2
45	Bayesian model calibration on active subspaces. , 2017, , .		1
46	Bayesian metropolis methods applied to sensor networks for radiation source localization. , 2016, , .		7
47	Model Development for PZT Bimorph Actuation Employed for Micro-Air Vehicles. , 2016, , .		6
48	Frequentist and Bayesian Lasso Techniques for Parameter Selection in Nonlinearly Parameterized Models**This research was supported in part by the Department of Energy National Nuclear Security Administration (NNSA) through the Consortium for Nonproliferation Enabling Capabilities (CNEC) award number DE-NA0002576. IFAC-PapersOnLine, 2016, 49, 416-421.	0.9	0
49	Model Discrepancy**This research was supported in part by the Air Force Office of Scientific Research grant AFOSR FA9550-11-1-0152. It was also supported by the Consortium for Advanced Simulation of Light Water Reactors (http://www.casl.gov), an Energy Innovation Hub, (http://www.energy.gov/hubs) for Modeling and Simulation of Nuclear Reactors under U.S. Department of Energy Contract No. DE-AC05-00OR22725.. IFAC-PapersOnLine, 2016, 49, 428-433.	0.9	0
50	Gradient free active subspace construction using Morris screening elementary effects. Computers and Mathematics With Applications, 2016, 72, 1603-1615.	2.7	12
51	Parameter Selection and Verification Techniques Based on Global Sensitivity Analysis Illustrated for an HIV Model. SIAM-ASA Journal on Uncertainty Quantification, 2016, 4, 266-297.	2.0	31
52	An information theoretic approach to use high-fidelity codes to calibrate low-fidelity codes. Journal of Computational Physics, 2016, 324, 24-43.	3.8	17
53	Uncertainty analysis of continuum scale ferroelectric energy landscapes using density functional theory. , 2016, , .		0
54	Adaptive and active materials: selected papers from the ASME 2015 Conference on Smart Materials, Adaptive Structures and Intelligent Systems (SMASIS 15) (Colorado Springs, CO, USA, 21-23 September) Tj ETQ 0 0 rg BT /Overlock		0

#	ARTICLE	IF	CITATIONS
55	Use of Bayesian Inference in Crystallographic Structure Refinement via Full Diffraction Profile Analysis. <i>Scientific Reports</i> , 2016, 6, 31625.	3.3	20
56	A PARAMETER SUBSET SELECTION ALGORITHM FOR MIXED-EFFECTS MODELS. , 2016, 6, 405-416.		1
57	Bayesian uncertainty analysis of finite deformation viscoelasticity. <i>Mechanics of Materials</i> , 2015, 91, 35-49.	3.2	38
58	Uncertainty Analysis of a Finite Deformation Viscoelastic Model. , 2014, , .		2
59	A modeling and uncertainty quantification framework for a flexible structure with macrofiber composite actuators operating in hysteretic regimes. <i>Journal of Intelligent Material Systems and Structures</i> , 2014, 25, 204-228.	2.5	17
60	Quantification of parameter and model uncertainty for shape memory alloy bending actuators. <i>Journal of Intelligent Material Systems and Structures</i> , 2014, 25, 229-245.	2.5	9
61	Model Calibration for Beam Models in the Presence of Model Discrepancy. , 2014, , .		0
62	Data-Driven Design of Sliding Mode Controllers for Ferroelectric Actuators. <i>IFAC Postprint Volumes IPPV / International Federation of Automatic Control</i> , 2014, 47, 1053-1058.	0.4	1
63	High-Dimensional Model Representations for the Neutron Transport Equation. <i>Nuclear Science and Engineering</i> , 2014, 177, 350-360.	1.1	3
64	Inversion algorithms for the homogenized energy model for hysteresis in ferroelectric and shape memory alloy compounds. <i>Journal of Intelligent Material Systems and Structures</i> , 2013, 24, 1796-1821.	2.5	13
65	Quantification of parameter uncertainty for robust control of shape memory alloy bending actuators. <i>Smart Materials and Structures</i> , 2013, 22, 115021.	3.5	15
66	Comparison of Frequentist and Bayesian Confidence Analysis Methods on a Viscoelastic Stenosis Model. <i>SIAM-ASA Journal on Uncertainty Quantification</i> , 2013, 1, 348-369.	2.0	8
67	Uncertainty Quantification for Robust Control Design of Smart Material Systems. , 2013, , .		0
68	Bayesian Techniques to Quantify Parameter and Model Uncertainty for a Macro-Fiber Composite Model. <i>IFAC Postprint Volumes IPPV / International Federation of Automatic Control</i> , 2013, 46, 67-72.	0.4	0
69	Quantifying Plant Age and Available Water Effects on Soybean Leaf Conductance. <i>Agronomy Journal</i> , 2013, 105, 28-36.	1.8	1
70	Construction of Bayesian Prediction Intervals for Smart Systems. , 2013, , .		0
71	Data-driven techniques to estimate parameters in the homogenized energy model for shape memory alloys. <i>Journal of Intelligent Material Systems and Structures</i> , 2012, 23, 1897-1920.	2.5	14
72	Homogenized energy model for characterizing polarization and strains in hysteretic ferroelectric materials: Material properties and uniaxial model development. <i>Journal of Intelligent Material Systems and Structures</i> , 2012, 23, 1833-1867.	2.5	28

#	ARTICLE	IF	CITATIONS
73	The homogenized energy model for characterizing polarization and strains in hysteretic ferroelectric materials: Implementation algorithms and data-driven parameter estimation techniques. Journal of Intelligent Material Systems and Structures, 2012, 23, 1869-1894.	2.5	18
74	Sliding Mode Control for Inverse Compensated Hysteretic Smart Systems. , 2012, , .		1
75	Modeling and Bayesian parameter estimation for shape memory alloy bending actuators. , 2012, , .		1
76	Sliding mode control design for hysteretic ferroelectric materials. , 2012, , .		0
77	Sliding mode control based on an inverse compensator design for hysteretic smart systems. , 2012, , .		0
78	Data-driven techniques to estimate parameters in a rate-dependent ferromagnetic hysteresis model. Physica B: Condensed Matter, 2012, 407, 1394-1398.	2.7	8
79	Development of Robust Control Algorithms for Shape Memory Alloy Bending Actuators. , 2012, , .		2
80	The Homogenized Energy Model for Characterizing Magnetization and Strains in Ferromagnetic Materials. , 2012, , .		1
81	Statistical parameter estimation and uncertainty quantification for macro fiber composite actuators operating in nonlinear and hysteretic regimes. , 2011, , .		4
82	A Strain Model for Piezoelectric Materials Operating in Highly Hysteretic Regimes. , 2011, , .		0
83	Adaptive control design for hysteretic smart systems. , 2011, , .		0
84	Statistical parameter estimation for macro fiber composite actuators using the homogenized energy model. , 2011, , .		5
85	Density Function Optimization for the Homogenized Energy Model of Shape Memory Alloys. , 2011, , .		2
86	Design of RF MEMS switches without pull-in instability. Proceedings of SPIE, 2010, , .	0.8	3
87	A Non-linear Optimal Control Design using Narrowband Perturbation Feedback for Magnetostrictive Actuators. Journal of Intelligent Material Systems and Structures, 2010, 21, 1681-1693.	2.5	11
88	Proper orthogonal decomposition with updates for efficient control design in smart material systems. , 2010, , .		0
89	Inverse model construction for control implementation of macro fiber composite actuators operating in hysteretic regimes. Proceedings of SPIE, 2010, , .	0.8	1
90	Experimental Implementation of a Hybrid Nonlinear Control Design for Magnetostrictive Actuators. Journal of Dynamic Systems, Measurement and Control, Transactions of the ASME, 2009, 131, .	1.6	20

#	ARTICLE	IF	CITATIONS
91	Optimal Tracking Using Magnetostrictive Actuators Operating in Nonlinear and Hysteretic Regimes. Journal of Dynamic Systems, Measurement and Control, Transactions of the ASME, 2009, 131, .	1.6	9
92	Adaptive techniques for the MRAC, adaptive parameter identification, and on-line fault monitoring and accommodation for a class of positive real infinite dimensional systems. International Journal of Adaptive Control and Signal Processing, 2009, 23, 193-215.	4.1	29
93	Adaptive control design for hysteretic smart systems. , 2009, , .		0
94	Nonlinear Optimal Control Techniques for Vibration Attenuation Using Magnetostrictive Actuators. Journal of Intelligent Material Systems and Structures, 2008, 19, 193-209.	2.5	38
95	Model-based L ₁ adaptive control of hysteresis in smart materials. , 2008, , .		9
96	L ₁ adaptive control of hysteresis in smart materials. , 2008, , .		4
97	Experimental Implementation of a Nonlinear Control Method for Magnetostrictive Transducers. Proceedings of the American Control Conference, 2007, , .	0.0	4
98	A Stress-dependent Hysteresis Model for Ferroelectric Materials. Journal of Intelligent Material Systems and Structures, 2007, 18, 69-88.	2.5	29
99	Efficient inverse compensation for hysteresis via homogenized energy models. , 2007, , .		1
100	Open loop nonlinear optimal tracking control of a magnetostrictive terfenol-D actuator. , 2007, , .		1
101	High-speed parameter estimation algorithms for nonlinear smart materials. , 2007, , .		1
102	Adaptive Monitoring and Accommodation of Nonlinear Actuator Faults in Positive Real Infinite Dimensional Systems. IEEE Transactions on Automatic Control, 2007, 52, 2332-2338.	5.7	40
103	High speed inverse model implementation for real-time control of ferroelectric and ferromagnetic transducers operating in nonlinear and hysteretic regimes. , 2007, , .		0
104	Model-Based Robust Control Design for Magnetostrictive Transducers Operating in Hysteretic and Nonlinear Regimes. IEEE Transactions on Control Systems Technology, 2007, 15, 22-39.	5.2	49
105	Model Development for Atomic Force Microscope Stage Mechanisms. SIAM Journal on Applied Mathematics, 2006, 66, 1998-2026.	1.8	12
106	A homogenized energy model for the direct magnetomechanical effect. IEEE Transactions on Magnetics, 2006, 42, 1944-1957.	2.1	18
107	Nonlinear optimal tracking control of a piezoelectric nanopositioning stage. , 2006, , .		2
108	A reptation model for magnetic materials. , 2006, 6166, 142.		2

#	ARTICLE	IF	CITATIONS
109	Multi-Axial Homogenized Energy Model for Ferroelectric Materials. , 2006, , 81.		2
110	A unified framework for modeling hysteresis in ferroic materials. Journal of the Mechanics and Physics of Solids, 2006, 54, 46-85.	4.8	95
111	Efficient Implementation Algorithms for Homogenized Energy Models. Continuum Mechanics and Thermodynamics, 2006, 18, 137-155.	2.2	14
112	Monte Carlo simulation of a solvated ionic polymer with cluster morphology. Smart Materials and Structures, 2006, 15, 187-199.	3.5	18
113	Experimental validation of a homogenized energy model for magnetic after-effects. Applied Physics Letters, 2006, 88, 122511.	3.3	11
114	Adaptive monitoring and accommodation of nonlinear actuator faults in positive real infinite dimensional systems. , 2006, , .		4
115	Nonlinear Perturbation Control for Magnetic Transducers. , 2006, , .		6
116	Nonlinear optimal control of plate structures using magnetostrictive actuators. , 2005, 5757, 281.		2
117	A ferroelastic switching model for lead zirconate-titanate (PZT). , 2005, , .		1
118	Efficient implementation algorithm for a homogenized energy model with thermal relaxation. , 2005, , .		4
119	A homogenized free energy model for hysteresis in thin-film shape memory alloys. Thin Solid Films, 2005, 489, 266-290.	1.8	30
120	A rate-dependent two-dimensional free energy model for ferroelectric single crystals. Continuum Mechanics and Thermodynamics, 2005, 17, 337-350.	2.2	21
121	Application of Rotational Isomeric State Theory to Ionic Polymer Stiffness Predictions. Journal of Materials Research, 2005, 20, 2443-2455.	2.6	13
122	Parameter estimation techniques for a class of nonlinear hysteresis models. Inverse Problems, 2005, 21, 1363-1377.	2.0	10
123	A Stress-Dependent Hysteresis Model for PZT. Materials Research Society Symposia Proceedings, 2005, 881, 1.	0.1	0
124	A Temperature-dependent Constitutive Model for Relaxor Ferroelectrics. Journal of Intelligent Material Systems and Structures, 2005, 16, 433-448.	2.5	12
125	A Stress-Dependent Hysteresis Model for Ferromagnetic Transducer Materials. , 2005, , 175.		1
126	A Homogenized Energy Model for Hysteresis in Ferroelectric Materials: General Density Formulation. Journal of Intelligent Material Systems and Structures, 2005, 16, 713-732.	2.5	43

#	ARTICLE	IF	CITATIONS
127	Nonlinear Open Loop Optimal Tracking Using Magnetostrictive Transducers. , 2005, , .		1
128	Application of Monte Carlo Simulations to Hydrated Nafion Stiffness Predictions. , 2005, , .		0
129	A Unified Model for Hysteresis in Ferroic Materials. Materials Research Society Symposia Proceedings, 2004, 855, 141.	0.1	1
130	Parameter estimation techniques for a polarization hysteresis model. , 2004, , .		0
131	A unified model for hysteresis in ferroic materials. , 2003, , .		7
132	Free energy model for hysteresis in magnetostrictive transducers. Journal of Applied Physics, 2003, 93, 458-466.	2.5	131
133	Analysis of hybrid PMN/Terfenol broadband transducers in mechanical series configuration. , 2003, , .		3
134	Optimal control of piezoceramic actuators. , 2003, 5049, 264.		4
135	Model Development for the Positioning Mechanisms in an Atomic Force Microscope. , 2003, , 249-269.		6
136	A Coupled Magnetomechanical Model for Magnetostrictive Transducers and its Application to Villari-Effect Sensors. Journal of Intelligent Material Systems and Structures, 2002, 13, 737-747.	2.5	46
137	<title>Energy formulation for Preisach models</title>. , 2002, , .		11
138	A Unified Methodology for Modeling Hysteresis in Ferroic Materials. , 2001, , .		6
139	A Domain Wall Model for Hysteresis in Piezoelectric Materials. Journal of Intelligent Material Systems and Structures, 2000, 11, 62-79.	2.5	86
140	A Coupled Structural-Magnetic Strain and Stress Model for Magnetostrictive Transducers. Journal of Intelligent Material Systems and Structures, 2000, 11, 135-152.	2.5	78
141	Analysis and comparison of four anhysteretic polarization models for lead magnesium niobate. Journal of the Acoustical Society of America, 2000, 108, 1651-1662.	1.1	5
142	Optimized Design of Switching Amplifiersfor Piezoelectric Actuators. Journal of Intelligent Material Systems and Structures, 2000, 11, 887-901.	2.5	9
143	A Domain Wall Model for Hysteresis in Piezoelectric Materials. Journal of Intelligent Material Systems and Structures, 2000, 11, 62-79.	2.5	57
144	Domain Wall Theory for Ferroelectric Hysteresis. Journal of Intelligent Material Systems and Structures, 1999, 10, 195-213.	2.5	71

#	ARTICLE	IF	CITATIONS
145	A Nonlinear Optimal Control Method for Magnetostrictive Actuators. <i>Journal of Intelligent Material Systems and Structures</i> , 1998, 9, 468-486.	2.5	24
146	Experimental Confirmation of a PDE-Based Approach to Design of Feedback Controls. <i>SIAM Journal on Control and Optimization</i> , 1997, 35, 1263-1296.	2.1	14
147	A Galerkin Method for Linear PDE Systems in Circular Geometries with Structural Acoustic Problems. <i>SIAM Journal of Scientific Computing</i> , 1997, 18, 371-402.	2.8	3
148	The Sinc-Galerkin method for parameter-dependent self-adjoint problems. <i>Applied Mathematics and Computation</i> , 1992, 50, 175-202.	2.2	3
149	A fully Sinc-Galerkin method for Euler-Bernoulli beam models. <i>Numerical Methods for Partial Differential Equations</i> , 1992, 8, 171-202.	3.6	26
150	The Sinc-Galerkin Method for Fourth-Order Differential Equations. <i>SIAM Journal on Numerical Analysis</i> , 1991, 28, 760-788.	2.3	64