Krishna Garikipati

List of Publications by Year
in descending order

85	4,197	172386 29	114418 63
papers	citations	h-index	g-index

91	91	91	3583
all docs	docs citations	times ranked	citing authors

#	Article	IF	Citations
1	Perspectives on biological growth and remodeling. Journal of the Mechanics and Physics of Solids, 2011, 59, 863-883.	2.3	371
2	Continuous/discontinuous finite element approximations of fourth-order elliptic problems in structural and continuum mechanics with applications to thin beams and plates, and strain gradient elasticity. Computer Methods in Applied Mechanics and Engineering, 2002, 191, 3669-3750.	3.4	365
3	Integrating machine learning and multiscale modelingâ€"perspectives, challenges, and opportunities in the biological, biomedical, and behavioral sciences. Npj Digital Medicine, 2019, 2, 115.	5.7	319
4	An analysis of strong discontinuities in multiplicative finite strain plasticity and their relation with the numerical simulation of strain localization in solids. International Journal of Solids and Structures, 1996, 33, 2863-2885.	1.3	302
5	A continuum treatment of growth in biological tissue: the coupling of mass transport and mechanics. Journal of the Mechanics and Physics of Solids, 2004, 52, 1595-1625.	2.3	199
6	A discontinuous Galerkin method for the Cahnâ€"Hilliard equation. Journal of Computational Physics, 2006, 218, 860-877.	1.9	167
7	Multiscale Modeling Meets Machine Learning: What Can We Learn?. Archives of Computational Methods in Engineering, 2021, 28, 1017-1037.	6.0	164
8	Remodeling of biological tissue: Mechanically induced reorientation of a transversely isotropic chain network. Journal of the Mechanics and Physics of Solids, 2005, 53, 1552-1573.	2.3	163
9	Rate dependence of swelling in lithium-ion cells. Journal of Power Sources, 2014, 267, 197-202.	4.0	152
10	The Role of Coherency Strains on Phase Stability in Li[sub x]FePO[sub 4]: Needle Crystallites Minimize Coherency Strain and Overpotential. Journal of the Electrochemical Society, 2009, 156, A949.	1.3	119
11	Characterization of contact electromechanics through capacitance-voltage measurements and simulations. Journal of Microelectromechanical Systems, 1999, 8, 208-217.	1.7	118
12	A variational multiscale approach to strain localization â€" formulation for multidimensional problems. Computer Methods in Applied Mechanics and Engineering, 2000, 188, 39-60.	3.4	85
13	An energy basin finding algorithm for kinetic Monte Carlo acceleration. Journal of Chemical Physics, 2010, 132, 134104.	1.2	83
14	A study of strain localization in a multiple scale frameworkâ€"The one-dimensional problem. Computer Methods in Applied Mechanics and Engineering, 1998, 159, 193-222.	3.4	71
15	The Kinematics of Biological Growth. Applied Mechanics Reviews, 2009, 62, .	4.5	71
16	Machine learning materials physics: Integrable deep neural networks enable scale bridging by learning free energy functions. Computer Methods in Applied Mechanics and Engineering, 2019, 353, 201-216.	3.4	68
17	Three-dimensional isogeometric solutions to general boundary value problems of Toupinâ€™s gradient elasticity theory at finite strains. Computer Methods in Applied Mechanics and Engineering, 2014, 278, 705-728.	3.4	63
18	A discontinuous Galerkin formulation for a strain gradient-dependent damage model. Computer Methods in Applied Mechanics and Engineering, 2004, 193, 3633-3645.	3.4	58

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19	A Nonlocal Phenomenological Anisotropic Finite Deformation Plasticity Model Accounting for Dislocation Defects. Journal of Engineering Materials and Technology, Transactions of the ASME, 2002, 124, 380-387.	0.8	55
20	p38Î³ Promotes Breast Cancer Cell Motility and Metastasis through Regulation of RhoC GTPase, Cytoskeletal Architecture, and a Novel Leading Edge Behavior. Cancer Research, 2011, 71, 6338-6349.	0.4	53
21	Mechanochemical spinodal decomposition: a phenomenological theory of phase transformations in multi-component, crystalline solids. Npj Computational Materials, 2016, 2, .	3.5	52
22	Machine learning materials physics: Surrogate optimization and multi-fidelity algorithms predict precipitate morphology in an alternative to phase field dynamics. Computer Methods in Applied Mechanics and Engineering, 2019, 344, 666-693.	3.4	52
23	Machine learning materials physics: Multi-resolution neural networks learn the free energy and nonlinear elastic response of evolving microstructures. Computer Methods in Applied Mechanics and Engineering, 2020, 372, 113362.	3.4	49
24	Variational system identification of the partial differential equations governing the physics of pattern-formation: Inference under varying fidelity and noise. Computer Methods in Applied Mechanics and Engineering, 2019, 356, 44-74.	3.4	45
25	In-plane fracture of laminated fiber reinforced composites with varying fracture resistance: Experimental observations and numerical crack propagation simulations. International Journal of Solids and Structures, 2010, 47, 901-911.	1.3	44
26	Biological remodelling: Stationary energy, configurational change, internal variables and dissipation. Journal of the Mechanics and Physics of Solids, 2006, 54, 1493-1515.	2.3	43
27	CRIMSON: An open-source software framework for cardiovascular integrated modelling and simulation. PLoS Computational Biology, 2021, 17, e1008881.	1.5	42
28	A lattice-based micromechanical continuum formulation for stress-driven mass transport in polycrystalline solids. Journal of the Mechanics and Physics of Solids, 2001, 49, 1209-1237.	2.3	36
29	Predictions of crack propagation using a variational multiscale approach and its application to fracture in laminated fiber reinforced composites. Composite Structures, 2012, 94, 3336-3346.	3.1	30
30	PRISMS: An Integrated, Open-Source Framework for Accelerating Predictive Structural Materials Science. Jom, 2018, 70, 2298-2314.	0.9	30
31	A mechanical model reveals that non-axisymmetric buckling lowers the energy barrier associated with membrane neck constriction. Soft Matter, 2020, 16, 784-797.	1.2	29
32	A discontinuous Galerkin method for strain gradient-dependent damage: Study of interpolations and convergence. Computer Methods in Applied Mechanics and Engineering, 2006, 195, 1480-1498.	3.4	27
33	Elastic Free Energy Drives the Shape of Prevascular Solid Tumors. PLoS ONE, 2014, 9, e103245.	1.1	27
34	Recent Advances in Models for Thermal Oxidation of Silicon. Journal of Computational Physics, 2001, 174, 138-170.	1.9	26
35	On the convexity of transversely isotropic chain network modelsâ€. Philosophical Magazine, 2006, 86, 3241-3258.	0.7	26
36	The continuum elastic and atomistic viewpoints on the formation volume and strain energy of a point defect. Journal of the Mechanics and Physics of Solids, 2006, 54, 1929-1951.	2.3	25

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37	<i>In silico</i>estimates of the free energy rates in growing tumor spheroids. Journal of Physics Condensed Matter, 2010, 22, 194122.	0.7	24
38	The Non-Equilibrium Thermodynamics and Kinetics of Focal Adhesion Dynamics. PLoS ONE, 2010, 5, e12043.	1.1	24
39	Variational system identification of the partial differential equations governing microstructure evolution in materials: Inference over sparse and spatially unrelated data. Computer Methods in Applied Mechanics and Engineering, 2021, 377, 113706.	3.4	21
40	Elastica-based strain energy functions for soft biological tissue. Journal of the Mechanics and Physics of Solids, 2008, 56, 1693-1713.	2.3	20
41	The micromechanics of fluidâ€“solid interactions during growth in porous soft biological tissue. Biomechanics and Modeling in Mechanobiology, 2009, 8, 167-181.	1.4	19
42	A computational study of the mechanisms of growth-driven folding patterns on shells, with application to the developing brain. Extreme Mechanics Letters, 2018, 18, 58-69.	2.0	19
43	The Materials Research Platform: Defining the Requirements from User Stories. Matter, 2019, 1, 1433-1438.	5.0	19
44	System inference for the spatio-temporal evolution of infectious diseases: Michigan in the time of COVID-19. Computational Mechanics, 2020, 66, 1153-1176.	2.2	19
45	Inference of deformation mechanisms and constitutive response of soft material surrogates of biological tissue by full-field characterization and data-driven variational system identification. Journal of the Mechanics and Physics of Solids, 2021, 153, 104474.	2.3	19
46	An assumed-gradient finite element method for the level set equation. International Journal for Numerical Methods in Engineering, 2005, 64, 1009-1032.	1.5	18
47	Advances in the numerical treatment of grain-boundary migration: Coupling with mass transport and mechanics. Computer Methods in Applied Mechanics and Engineering, 2006, 196, 595-607.	3.4	18
48	Perspectives on the mathematics of biological patterning and morphogenesis. Journal of the Mechanics and Physics of Solids, 2017, 99, 192-210.	2.3	18
49	Variational multiscale methods to embed the macromechanical continuum formulation with fine-scale strain gradient theories. International Journal for Numerical Methods in Engineering, 2003, 57, 1283-1298.	1.5	17
50	A comparison of Redlich-Kister polynomial and cubic spline representations of the chemical potential in phase field computations. Computational Materials Science, 2017, 128, 127-139.	1.4	17
51	Scale bridging materials physics: Active learning workflows and integrable deep neural networks for free energy function representations in alloys. Computer Methods in Applied Mechanics and Engineering, 2020, 371, 113281.	3.4	17
52	Elastic effects on relaxation volume tensor calculations. Physical Review B, 2008, 77, .	1.1	16
53	A Diffuse Interface Framework for Modeling the Evolution of Multi-cell Aggregates as a Soft Packing Problem Driven by the Growth and Division of Cells. Bulletin of Mathematical Biology, 2019, 81, 3282-3300.	0.9	16
54	Modeling strength and failure variability due to porosity in additively manufactured metals. Computer Methods in Applied Mechanics and Engineering, 2021, 373, 113471.	3.4	16

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55	A perspective on regression and Bayesian approaches for system identification of pattern formation dynamics. Theoretical and Applied Mechanics Letters, 2020, 10, 188-194.	1.3	15
56	Couple stresses in crystalline solids: origins from plastic slip gradients, dislocation core distortions, and three-body interatomic potentials. Journal of the Mechanics and Physics of Solids, 2003, 51, 1189-1214.	2.3	14
57	Experimental observations and numerical simulations of curved crack propagation in laminated fiber composites. Composites Science and Technology, 2012, 72, 1064-1074.	3.8	14
58	A three dimensional field formulation, and isogeometric solutions to point and line defects using Toupin's theory of gradient elasticity at finite strains. Journal of the Mechanics and Physics of Solids, 2016, 94, 336-361.	2.3	13
59	A fourth-order phase-field fracture model: Formulation and numerical solution using a continuous/discontinuous Galerkin method. Journal of the Mechanics and Physics of Solids, 2022, 165, 104910.	2.3	13
60	A variational multiscale method to incorporate strain gradients in a phenomenological plasticity model. Computer Methods in Applied Mechanics and Engineering, 2004, 193, 5453-5475.	3.4	12
61	Experimental characterization of tumor spheroids for studies of the energetics of tumor growth. International Journal of Materials Research, 2011, 102, 889-895.	0.1	11
62	Unconditionally stable, second-order accurate schemes for solid state phase transformations driven by mechano-chemical spinodal decomposition. Computer Methods in Applied Mechanics and Engineering, 2016, 311, 556-575.	3.4	11
63	An inverse modelling study on the local volume changes during early morphoelastic growth of the fetal human brain. Brain Multiphysics, 2021, 2, 100023.	0.8	11
64	A computational framework for the morpho-elastic development of molluskan shells by surface and volume growth. PLoS Computational Biology, 2019, 15, e1007213.	1.5	10
65	A graph theoretic framework for representation, exploration and analysis on computed states of physical systems. Computer Methods in Applied Mechanics and Engineering, 2019, 351, 501-530.	3.4	10
66	A Computational Study of Stress Fiber-Focal Adhesion Dynamics Governing Cell Contractility. Biophysical Journal, 2014, 106, 1890-1901.	0.2	9
67	Intercalation Driven Porosity Effects in Coupled Continuum Models for the Electrical, Chemical, Thermal and Mechanical Response of Battery Electrode Materials. Journal of the Electrochemical Society, 2017, 164, A2199-A2212.	1.3	9
68	System Inference Via Field Inversion for the Spatio-Temporal Progression of Infectious Diseases: Studies of COVID-19 in Michigan and Mexico. Archives of Computational Methods in Engineering, 2021, 28, 4283-4295.	6.0	9
69	Second order threshold dynamics schemes for two phase motion by mean curvature. Journal of Computational Physics, 2020, 410, 109404.	1.9	9
70	Multiphysics Simulations of Lithiation-Induced Stress in Li_{1+<i>x</i>}Ti₂O₄ Electrode Particles. Journal of Physical Chemistry C, 2016, 120, 27871-27881.	1.5	8
71	A variational treatment of material configurations with application to interface motion and microstructural evolution. Journal of the Mechanics and Physics of Solids, 2017, 99, 338-356.	2.3	5
72	On standard and vector finite element analysis of a strict anti-plane shear plasticity model with elastic curvature. Computer Methods in Applied Mechanics and Engineering, 2007, 196, 2692-2712.	3.4	4

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73	The mechanochemistry of cytoskeletal force generation. Biomechanics and Modeling in Mechanobiology, 2015, 14, 59-72.	1.4	4
74	Unconditionally stable, second-order schemes for gradient-regularized, non-convex, finite-strain elasticity modeling martensitic phase transformations. Computer Methods in Applied Mechanics and Engineering, 2018, 338, 597-617.	3.4	4
75	Biomembranes undergo complex, non-axisymmetric deformations governed by Kirchhoffâ€"Love kinematicsand revealed by a three-dimensional computational framework. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2021, 477, 20210246.	1.0	4
76	A simple solution strategy for coupled piezo-diffusion in elastic solids. Computational Mechanics, 2009, 44, 191-203.	2.2	3
77	A Multi-Physics Battery Model with Particle Scale Resolution of Porosity Evolution Driven by Intercalation Strain and Electrolyte Flow. Journal of the Electrochemical Society, 2018, 165, A2421-A2438.	1.3	3
78	Atomically-based Field Formulations for Coupled Problems of Composition and Mechanics. Materials Research Society Symposia Proceedings, 2000, 653, 1.	0.1	1
79	The spatial patterning potential of nonlinear diffusion. Physics of Life Reviews, 2016, 19, 128-130.	1.5	1
80	Variational Extrapolation of Implicit Schemes for General Gradient Flows. SIAM Journal on Numerical Analysis, 2020, 58, 2799-2817.	1.1	1
81	Methodology for Sensitivity Analysis of Homogenized Cross-Sections to Instantaneous and Historical Lattice Conditions with Application to AP1000Â® PWR Lattice. Energies, 2021, 14, 3378.	1.6	1
82	Atomically-based Field Formulations for Coupled Problems of Composition and Mechanics. Materials Research Society Symposia Proceedings, 2000, 653, .	0.1	0
83	Using Elasticity to Correct for Boundary Effects in Calculations of Stress-Diffusion Coupling Parameters. Materials Research Society Symposia Proceedings, 2006, 978, .	0.1	0
84	Sensitivity of void mediated failure to geometric design features of porous metals. International Journal of Solids and Structures, 2022, 236-237, 111309.	1.3	0
85	mechanoChemML: A software library for machine learning in computational materials physics. Computational Materials Science, 2022, 211, 111493.	1.4	0