Amit Acharya

List of Publications by Year
in descending order

88 papers	2,763 citations	236925 25 h-index	182427 51 g-index
88 all docs	88 docs citations	88 times ranked	925 citing authors

#	Article	IF	Citations
1	Lattice incompatibility and a gradient theory of crystal plasticity. Journal of the Mechanics and Physics of Solids, 2000, 48, 1565-1595.	4.8	401
2	A model of crystal plasticity based on the theory of continuously distributed dislocations. Journal of the Mechanics and Physics of Solids, 2001, 49, 761-784.	4.8	280
3	Grain-size effect in viscoplastic polycrystals at moderate strains. Journal of the Mechanics and Physics of Solids, 2000, 48, 2213-2230.	4.8	262
4	Size effects and idealized dislocation microstructure at small scales: Predictions of a Phenomenological model of Mesoscopic Field Dislocation Mechanics: Part I. Journal of the Mechanics and Physics of Solids, 2006, 54, 1687-1710.	4.8	138
5	Finite element approximation of field dislocation mechanics. Journal of the Mechanics and Physics of Solids, 2005, 53, 143-170.	4.8	108
6	Consideration of grain-size effect and kinetics in the plastic deformation of metal polycrystals. Acta Materialia, 2000, 48, 3409-3423.	7.9	105
7	Constitutive analysis of finite deformation field dislocation mechanics. Journal of the Mechanics and Physics of Solids, 2004, 52, 301-316.	4.8	92
8	Driving forces and boundary conditions in continuum dislocation mechanics. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2003, 459, 1343-1363.	2.1	85
9	Size effects and idealized dislocation microstructure at small scales: Predictions of a Phenomenological model of Mesoscopic Field Dislocation Mechanics: Part II. Journal of the Mechanics and Physics of Solids, 2006, 54, 1711-1743.	4.8	78
10	New Perspectives in Plasticity Theory: Dislocation Nucleation, Waves, and Partial Continuity of Plastic Strain Rate. Mathematics and Mechanics of Solids, 2008, 13, 292-315.	2.4	62
11	Dislocation transport using an explicit Galerkin/least-squares formulation. Modelling and Simulation in Materials Science and Engineering, 2006, 14, 1245-1270.	2.0	60
12	A stress-gradient based criterion for dislocation nucleation in crystals. Journal of the Mechanics and Physics of Solids, 2004, 52, 1507-1525.	4.8	56
13	Geometrically necessary dislocations, hardening, and a simple gradient theory of crystal plasticity. Scripta Materialia, 2003, 48, 167-172.	5.2	52
14	Jump condition for GND evolution as a constraint on slip transmission at grain boundaries. Philosophical Magazine, 2007, 87, 1349-1359.	1.6	51
15	A single theory for some quasi-static, supersonic, atomic, and tectonic scale applications of dislocations. Journal of the Mechanics and Physics of Solids, 2015, 84, 145-195.	4.8	48
16	Mechanical response of multicrystalline thin films in mesoscale field dislocation mechanics. Journal of the Mechanics and Physics of Solids, 2011, 59, 2400-2417.	4.8	43
17	Microcanonical Entropy and Mesoscale Dislocation Mechanics and Plasticity. Journal of Elasticity, 2011, 104, 23-44.	1.9	43
18	Numerical implementation of static Field Dislocation Mechanics theory for periodic media. Philosophical Magazine, 2014, 94, 1764-1787.	1.6	40

#	Article	IF	Citations
19	A model for rate-dependent flow of metal polycrystals based on the slip plane lattice incompatibility. Materials Science & Engineering A: Structural Materials: Properties, Microstructure and Processing, 2001, 309-310, 411-415.	5.6	37
20	On boundary conditions and plastic strain-gradient discontinuity in lower-order gradient plasticity. Journal of the Mechanics and Physics of Solids, 2004, 52, 1793-1826.	4.8	35
21	Thermodynamic restrictions on constitutive equations for second-deformation-gradient inelastic behavior. Journal of the Mechanics and Physics of Solids, 1995, 43, 1751-1772.	4.8	34
22	New inroads in an old subject: Plasticity, from around the atomic to the macroscopic scale. Journal of the Mechanics and Physics of Solids, 2010, 58, 766-778.	4.8	34
23	Coupled phase transformations and plasticity as a field theory of deformation incompatibility. International Journal of Fracture, 2012, 174, 87-94.	2.2	33
24	Continuity in the plastic strain rate and its influence on texture evolution. Journal of the Mechanics and Physics of Solids, 2010, 58, 105-128.	4.8	27
25	Dislocation pattern formation in finite deformation crystal plasticity. International Journal of Solids and Structures, 2020, 184, 114-135.	2.7	26
26	Continuum theory and methods for coarse-grained, mesoscopic plasticity. Scripta Materialia, 2006, 54, 705-710.	5.2	25
27	A study of conditions for dislocation nucleation in coarser-than-atomistic scale models. Journal of the Mechanics and Physics of Solids, 2015, 75, 76-92.	4.8	22
28	Finite element approximation of finite deformation dislocation mechanics. Computer Methods in Applied Mechanics and Engineering, 2020, 367, 113076.	6.6	22
29	On a computational approach for the approximate dynamics of averaged variables in nonlinear ODE systems: Toward the derivation of constitutive laws of the rate type. Journal of the Mechanics and Physics of Solids, 2006, 54, 2183-2213.	4.8	21
30	Phenomenological mesoscopic field dislocation mechanics, lower-order gradient plasticity, and transport of mean excess dislocation density. Modelling and Simulation in Materials Science and Engineering, 2007, 15, S167-S180.	2.0	21
31	On the relevance of generalized disclinations in defect mechanics. Journal of the Mechanics and Physics of Solids, 2018, 119, 188-223.	4.8	18
32	A unification of finite deformation J2 Von-Mises plasticity and quantitative dislocation mechanics. Journal of the Mechanics and Physics of Solids, 2020, 143, 104050.	4.8	18
33	The Clausius-Duhem Inequality and the structure of rate-independent plasticity. International Journal of Plasticity, 1996, 12, 229-238.	8.8	16
34	Effects of lattice incompatibility-induced hardening on the fracture behavior of ductile single crystals. Journal of the Mechanics and Physics of Solids, 2004, 52, 2841-2867.	4.8	14
35	Modeling dislocation sources and size effects at initial yield in continuum plasticity. Journal of Mechanics of Materials and Structures, 2009, 4, 1603-1618.	0.6	14
36	Continuum Mechanics of the Interaction of Phase Boundaries and Dislocations in Solids. Springer Proceedings in Mathematics and Statistics, 2015, , 123-165.	0.2	14

#	Article	IF	Citations
37	Finite element approximation of the fields of bulk and interfacial line defects. Journal of the Mechanics and Physics of Solids, 2018, 114, 258-302.	4.8	14
38	Travelling wave solutions for a quasilinear model of field dislocation mechanics. Journal of the Mechanics and Physics of Solids, 2010, 58, 2043-2053.	4.8	13
39	A Space-Time Discontinuous Galerkin Method for Elastodynamic Analysis. Lecture Notes in Computational Science and Engineering, 2000, , 459-464.	0.3	13
40	Directional dependence of crack growth along the interface of a bicrystal with symmetric tilt boundary in the presence of gradient effects. Mechanics of Materials, 2005, 37, 593-606.	3.2	11
41	Controlling Plastic Flow across Grain Boundaries in a Continuum Model. Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 2011, 42, 669-675.	2.2	11
42	From dislocation motion to an additive velocity gradient decomposition, and some simple models of dislocation dynamics. Chinese Annals of Mathematics Series B, 2015, 36, 645-658.	0.4	11
43	A nonlinear generalization of the Koiterâ€"Sandersâ€"Budiansky bending strain measure. International Journal of Solids and Structures, 2000, 37, 5517-5528.	2.7	10
44	Parametrized invariant manifolds: a recipe for multiscale modeling?. Computer Methods in Applied Mechanics and Engineering, 2005, 194, 3067-3089.	6.6	10
45	On Compatibility Conditions for the Left Cauchyâ€"Green Deformation Field in Three Dimensions. , 1999, 56, 95-105.		9
46	Dislocation motion and instability. Journal of the Mechanics and Physics of Solids, 2013, 61, 1835-1853.	4.8	9
47	Modeling of slow time-scale behavior of fast molecular dynamic systems. Journal of the Mechanics and Physics of Solids, 2014, 64, 24-43.	4.8	9
48	A non-traditional view on the modeling of nematic disclination dynamics. Quarterly of Applied Mathematics, 2017, 75, 309-357.	0.7	9
49	Field dislocation mechanics and phase field crystal models. Physical Review B, 2020, 102, .	3.2	9
50	Computing with non-orientable defects: Nematics, smectics and natural patterns. Physica D: Nonlinear Phenomena, 2021, 417, 132828.	2.8	9
51	A distinct element approach to ball mill mechanics. Communications in Numerical Methods in Engineering, 2000, 16, 743-753.	1.3	8
52	Model reduction via parametrized locally invariant manifolds: Some examples. Computer Methods in Applied Mechanics and Engineering, 2006, 195, 6287-6311.	6.6	8
53	Coarse-Graining Autonomous ODE Systems by Inducing a Separation of Scales: Practical Strategies and Mathematical Questions. Mathematics and Mechanics of Solids, 2010, 15, 342-352.	2.4	8
54	Elementary observations on the averaging of dislocation mechanics: Dislocation origin of aspects of anisotropic yield and plastic spin. Procedia IUTAM, 2012, 3, 301-313.	1.2	8

#	Article	IF	Citations
55	Continuum mechanics of line defects in liquid crystals and liquid crystal elastomers. Quarterly of Applied Mathematics, 2014, 72, 33-64.	0.7	8
56	Microstructure in plasticity without nonconvexity. Computational Mechanics, 2016, 57, 387-403.	4.0	8
57	Time-averaged coarse variables for multi-scale dynamics. Quarterly of Applied Mathematics, 2012, 70, 793-803.	0.7	8
58	Coarse variables of autonomous ODE systems and their evolution. Computer Methods in Applied Mechanics and Engineering, 2013, 253, 199-218.	6.6	7
59	Can equations of equilibrium predict all physical equilibria? A case study from Field Dislocation Mechanics. Mathematics and Mechanics of Solids, 2013, 18, 803-822.	2.4	7
60	On the structure of linear dislocation field theory. Journal of the Mechanics and Physics of Solids, 2019, 130, 216-244.	4.8	7
61	On Weingarten-Volterra Defects. Journal of Elasticity, 2019, 134, 79-101.	1.9	7
62	A new proposal in gradient plasticity: theory and application in 1â€Ð quasiâ€statics and dynamics. International Journal for Numerical and Analytical Methods in Geomechanics, 1999, 4, 153-170.	0.8	6
63	Arbitrary Lagrangianâ€"Eulerian methods for analysis of regressing solid domains and interface tracking. Computers and Structures, 2009, 87, 355-367.	4.4	6
64	A fundamental improvement to Ericksen-Leslie kinematics. Quarterly of Applied Mathematics, 2015, 73, 435-466.	0.7	6
65	Computational modelling of tactoid dynamics in chromonic liquid crystals. Liquid Crystals, 2018, 45, 1084-1100.	2.2	6
66	An action for nonlinear dislocation dynamics. Journal of the Mechanics and Physics of Solids, 2022, 161, 104811.	4.8	6
67	An Observation on the Experimental Measurement of Dislocation Density. Journal of Elasticity, 2014, 114, 275-279.	1.9	5
68	The metric-restricted inverse design problem. Nonlinearity, 2016, 29, 1769-1797.	1.4	5
69	A microscopic continuum model for defect dynamics in metallic glasses. Journal of the Mechanics and Physics of Solids, 2017, 104, 1-11.	4.8	5
70	A Design Principle for Actuation of Nematic Glass Sheets. Journal of Elasticity, 2019, 136, 237-249.	1.9	5
71	Analysis of a model of field crack mechanics for brittle materials. Computer Methods in Applied Mechanics and Engineering, 2021, 386, 114061.	6.6	5
72	On the Choice of Coarse Variables for Dynamics. International Journal for Multiscale Computational Engineering, 2007, 5, 483-489.	1.2	5

#	Article	IF	Citations
73	Fluids, Elasticity, Geometry, and the Existence of Wrinkled Solutions. Archive for Rational Mechanics and Analysis, 2017, 226, 1009-1060.	2.4	4
74	Fracture and Singularities of the Mass-Density Gradient Field. Journal of Elasticity, 2018, 132, 243-260.	1.9	4
75	A Counterpoint to Cermelli and Gurtinâ€™s Criteria for Choosing the â€˜Correctâ€™ Geometric Dislocation Tensor in Finite Plasticity. IUTAM Symposium on Cellular, Molecular and Tissue Mechanics, 2008, , 99-105.	0.2	4
76	Dislocation Mediated Continuum Plasticity: Case Studies on Modeling Scale Dependence, Scale-Invariance, and Directionality of Sharp Yield-Point. , 2011, , 277-309.		4
77	Computing singularly perturbed differential equations. Journal of Computational Physics, 2018, 354, 417-446.	3.8	3
78	Some preliminary observations on a defect Navierâ€“Stokes system. Comptes Rendus - Mecanique, 2019, 347, 677-684.	2.1	3
79	Stress of a Spatially Uniform Dislocation Density Field. Journal of Elasticity, 2019, 137, 151-155.	1.9	3
80	Plasticity without phenomenology: A first step. Journal of the Mechanics and Physics of Solids, 2020, 143, 104059.	4.8	3
81	Mechanics of moving defects in growing sheets: 3-d, small deformation theory. Materials Theory, 2020, 4, .	4.3	3
82	Use of Thermodynamic Formalism in Generalized Continuum Theories and a Model for Damage Evolution. Journal of Engineering Mechanics - ASCE, 2009, 135, 171-177.	2.9	2
83	A possible link between brittle and ductile failure by viewing fracture as a topological defect. , 2020, 348, 275-284.		2
84	On the three-dimensional Filon construct for dislocations. International Journal of Engineering Science, 2012, 59, 6-26.	5.0	1
85	Microcanonical Entropy and Mesoscale Dislocation Mechanics and Plasticity. , 2011, , 23-44.		1
86	Coupled phase transformations and plasticity as a field theory of deformation incompatibility. , 2011, , 87-94.		0
87	Rotations with Constant $$\mathbf {{\text {curl }}}$$ are Constant. Archive for Rational Mechanics and Analysis, 0, , .	2.4	0
88	A distinct element approach to ball mill mechanics. Communications in Numerical Methods in Engineering, 2000, 16, 743-753.	1.3	0