

Eran Bouchbinder

List of Publications by Year in descending order

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98
papers

3,656
citations

94433

37
h-index

144013

57
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99
all docs

99
docs citations

99
times ranked

2232
citing authors

#	ARTICLE	IF	CITATIONS
1	Cell reorientation under cyclic stretching. <i>Nature Communications</i> , 2014, 5, 3938.	12.8	167
2	Statistics and Properties of Low-Frequency Vibrational Modes in Structural Glasses. <i>Physical Review Letters</i> , 2016, 117, 035501.	7.8	166
3	Thermodynamic theory of dislocation-mediated plasticity. <i>Acta Materialia</i> , 2010, 58, 3718-3732.	7.9	139
4	The Near-Tip Fields of Fast Cracks. <i>Science</i> , 2010, 327, 1359-1363.	12.6	134
5	Mechanical glass transition revealed by the fracture toughness of metallic glasses. <i>Nature Communications</i> , 2018, 9, 3271.	12.8	103
6	The Fracture of Highly Deformable Soft Materials: A Tale of Two Length Scales. <i>Annual Review of Condensed Matter Physics</i> , 2021, 12, 71-94.	14.5	103
7	Nonequilibrium thermodynamics of driven amorphous materials. II. Effective-temperature theory. <i>Physical Review E</i> , 2009, 80, 031132.	2.1	96
8	Athermal shear-transformation-zone theory of amorphous plastic deformation. I. Basic principles. <i>Physical Review E</i> , 2007, 75, 036107.	2.1	92
9	Fracture Toughness of Metallic Glasses: Annealing-Induced Embrittlement. <i>Physical Review Letters</i> , 2012, 109, 194301.	7.8	90
10	Universal Nonphononic Density of States in 2D, 3D, and 4D Glasses. <i>Physical Review Letters</i> , 2018, 121, 055501.	7.8	83
11	Breakdown of Linear Elastic Fracture Mechanics near the Tip of a Rapid Crack. <i>Physical Review Letters</i> , 2008, 101, 264301.	7.8	80
12	The dynamics of rapid fracture: instabilities, nonlinearities and length scales. <i>Reports on Progress in Physics</i> , 2014, 77, 046501.	20.1	79
13	Dynamics of Simple Cracks. <i>Annual Review of Condensed Matter Physics</i> , 2010, 1, 371-395.	14.5	77
14	On the velocity-strengthening behavior of dry friction. <i>Journal of Geophysical Research: Solid Earth</i> , 2014, 119, 1738-1748.	3.4	75
15	Nonequilibrium thermodynamics of driven amorphous materials. III. Shear-transformation-zone plasticity. <i>Physical Review E</i> , 2009, 80, 031133.	2.1	72
16	Weakly Nonlinear Theory of Dynamic Fracture. <i>Physical Review Letters</i> , 2008, 101, 264302.	7.8	70
17	Nonequilibrium thermodynamics of driven amorphous materials. I. Internal degrees of freedom and volume deformation. <i>Physical Review E</i> , 2009, 80, 031131.	2.1	70
18	Pinching a glass reveals key properties of its soft spots. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2020, 117, 5228-5234.	7.1	67

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19	Local thermal energy as a structural indicator in glasses. Proceedings of the National Academy of Sciences of the United States of America, 2017, 114, 7289-7294.	7.1	65
20	A characteristic energy scale in glasses. Journal of Chemical Physics, 2018, 148, 214502.	3.0	63
21	Universality of the Nonphononic Vibrational Spectrum across Different Classes of Computer Glasses. Physical Review Letters, 2020, 125, 085502.	7.8	60
22	Slow Cracklike Dynamics at the Onset of Frictional Sliding. Physical Review Letters, 2011, 107, 235501.	7.8	56
23	Athermal shear-transformation-zone theory of amorphous plastic deformation. II. Analysis of simulated amorphous silicon. Physical Review E, 2007, 75, 036108.	2.1	54
24	Instability in dynamic fracture and the failure of the classical theory of cracks. Nature Physics, 2017, 13, 1186-1190.	16.7	54
25	Effect of instantaneous and continuous quenches on the density of vibrational modes in model glasses. Physical Review E, 2017, 96, 020104.	2.1	53
26	Slow rupture of frictional interfaces. Geophysical Research Letters, 2012, 39, .	4.0	52
27	Two-temperature continuum thermomechanics of deforming amorphous solids. Journal of the Mechanics and Physics of Solids, 2014, 73, 269-288.	4.8	52
28	Advancing the Mechanical Performance of Glasses: Perspectives and Challenges. Advanced Materials, 2022, 34, e2109029.	21.0	50
29	Fracture Surfaces as Multiscaling Graphs. Physical Review Letters, 2006, 96, 055509.	7.8	48
30	Recent developments in dynamic fracture: some perspectives. International Journal of Fracture, 2015, 196, 33-57.	2.2	48
31	The $1/r$ singularity in weakly nonlinear fracture mechanics. Journal of the Mechanics and Physics of Solids, 2009, 57, 1568-1577.	4.8	47
32	Wave attenuation in glasses: Rayleigh and generalized-Rayleigh scattering scaling. Journal of Chemical Physics, 2019, 151, 104503.	3.0	44
33	Linear Response Theory for Hard and Soft Glassy Materials. Physical Review Letters, 2011, 106, 148301.	7.8	43
34	Universal disorder-induced broadening of phonon bands: from disordered lattices to glasses. New Journal of Physics, 2018, 20, 073022.	2.9	43
35	Frustration-induced internal stresses are responsible for quasilocalized modes in structural glasses. Physical Review E, 2018, 97, 032140.	2.1	41
36	Instabilities at frictional interfaces: Creep patches, nucleation, and rupture fronts. Physical Review E, 2013, 88, 060403.	2.1	40

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37	Shear-transformation-zone theory of linear glassy dynamics. <i>Physical Review E</i> , 2011, 83, 061503.	2.1	37
38	Cellular contractile forces are nonmechanosensitive. <i>Science Advances</i> , 2020, 6, eaaz6997.	10.3	37
39	Dynamical instabilities of quasistatic crack propagation under thermal stress. <i>Physical Review E</i> , 2003, 68, 036601.	2.1	35
40	Roughening of Fracture Surfaces: The Role of Plastic Deformation. <i>Physical Review Letters</i> , 2004, 92, 245505.	7.8	34
41	Low-energy quasilocalized excitations in structural glasses. <i>Journal of Chemical Physics</i> , 2021, 155, 200901.	3.0	34
42	Branching instabilities in rapid fracture: Dynamics and geometry. <i>Physical Review E</i> , 2005, 71, 056118.	2.1	32
43	Dynamic Crack Tip Equation of Motion: High-Speed Oscillatory Instability. <i>Physical Review Letters</i> , 2009, 103, 164301.	7.8	32
44	The emergence of crack-like behavior of frictional rupture: Edge singularity and energy balance. <i>Earth and Planetary Science Letters</i> , 2020, 531, 115978.	4.4	31
45	Notch Fracture Toughness of Glasses: Dependence on Rate, Age, and Geometry. <i>Physical Review Applied</i> , 2016, 6, .	3.8	30
46	Weakly nonlinear fracture mechanics: experiments and theory. <i>International Journal of Fracture</i> , 2010, 162, 3-20.	2.2	28
47	Nonequilibrium thermodynamics of the Kovacs effect. <i>Soft Matter</i> , 2010, 6, 3065.	2.7	27
48	Low-frequency vibrational spectrum of mean-field disordered systems. <i>Physical Review B</i> , 2021, 103, .	3.2	27
49	Velocity-strengthening friction significantly affects interfacial dynamics, strength and dissipation. <i>Scientific Reports</i> , 2015, 5, 7841.	3.3	26
50	Anisotropic structural predictor in glassy materials. <i>Physical Review E</i> , 2019, 99, 060601.	2.1	26
51	Unstable Slip Pulses and Earthquake Nucleation as a Nonequilibrium First-Order Phase Transition. <i>Physical Review Letters</i> , 2018, 121, 234302.	7.8	25
52	Elastic moduli fluctuations predict wave attenuation rates in glasses. <i>Journal of Chemical Physics</i> , 2021, 154, 081101.	3.0	24
53	Intrinsic Nonlinear Scale Governs Oscillations in Rapid Fracture. <i>Physical Review Letters</i> , 2012, 108, 104303.	7.8	23
54	Variable-amplitude oscillatory shear response of amorphous materials. <i>Physical Review E</i> , 2014, 89, 062307.	2.1	22

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55	Oscillatory Instability in Two-Dimensional Dynamic Fracture. <i>Physical Review Letters</i> , 2007, 98, 124302.	7.8	21
56	Dynamic failure in amorphous solids via a cavitation instability. <i>Physical Review E</i> , 2008, 77, 025101.	2.1	21
57	Dynamic instabilities of frictional sliding at a bimaterial interface. <i>Journal of the Mechanics and Physics of Solids</i> , 2016, 89, 149-173.	4.8	20
58	Disentangling Scaling Properties in Anisotropic Fracture. <i>Physical Review Letters</i> , 2005, 95, 255503.	7.8	19
59	Mean-field model of interacting quasilocalized excitations in glasses. <i>SciPost Physics Core</i> , 2021, 4, .	2.8	17
60	Dynamic Stability of Crack Fronts: Out-Of-Plane Corrugations. <i>Physical Review Letters</i> , 2013, 110, 014302.	7.8	16
61	Tissue-Level Mechanosensitivity: Predicting and Controlling the Orientation of 3D Vascular Networks. <i>Nano Letters</i> , 2018, 18, 7698-7708.	9.1	16
62	Universality and Stability Phase Diagram of Two-Dimensional Brittle Fracture. <i>Physical Review Letters</i> , 2018, 121, 134301.	7.8	16
63	An Eulerian projection method for quasi-static elastoplasticity. <i>Journal of Computational Physics</i> , 2015, 300, 136-166.	3.8	15
64	Emergence of Cracklike Behavior of Frictional Rupture: The Origin of Stress Drops. <i>Physical Review X</i> , 2019, 9, .	8.9	14
65	Effective temperature dynamics in an athermal amorphous plasticity theory. <i>Physical Review E</i> , 2008, 77, 051505.	2.1	13
66	Frictional Sliding without Geometrical Reflection Symmetry. <i>Physical Review X</i> , 2016, 6, .	8.9	13
67	Critical Nucleation Length for Accelerating Frictional Slip. <i>Geophysical Research Letters</i> , 2017, 44, 11,390.	4.0	13
68	Brittle-to-ductile transitions in glasses: Roles of soft defects and loading geometry. <i>MRS Bulletin</i> , 2021, 46, 902-914.	3.5	13
69	Dissipative Viscoplastic Deformation in Dynamic Fracture: Tip Blunting and Velocity Selection. <i>Physical Review Letters</i> , 2006, 97, 134301.	7.8	12
70	Nonuniversality in microbranching instabilities in rapid fracture. <i>Physical Review E</i> , 2005, 72, 055103.	2.1	11
71	Viscoelastic fracture of biological composites. <i>Journal of the Mechanics and Physics of Solids</i> , 2011, 59, 2279-2293.	4.8	11
72	Simple nonlinear equation for structural relaxation in glasses. <i>Physical Review E</i> , 2012, 86, 010501.	2.1	11

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73	Spatiotemporal Dynamics of Frictional Systems: The Interplay of Interfacial Friction and Bulk Elasticity. <i>Lubricants</i> , 2019, 7, 91.	2.9	11
74	Extracting the properties of quasilocalized modes in computer glasses: Long-range continuum fields, contour integrals, and boundary effects. <i>Physical Review E</i> , 2020, 102, 033008.	2.1	11
75	Statistical mechanics of local force dipole responses in computer glasses. <i>Journal of Chemical Physics</i> , 2020, 152, 194503.	3.0	11
76	Unconventional singularities and energy balance in frictional rupture. <i>Nature Communications</i> , 2021, 12, 2585.	12.8	11
77	Stability of an expanding circular cavity and the failure of amorphous solids. <i>Physical Review E</i> , 2008, 78, 026124.	2.1	10
78	Elastic nonlinearities in a one-dimensional model of fracture. <i>Physical Review E</i> , 2008, 78, 056105.	2.1	10
79	Nonequilibrium thermodynamics and glassy rheology. <i>Soft Matter</i> , 2013, 9, 8786.	2.7	10
80	Velocity-driven frictional sliding: Coarsening and steady-state pulses. <i>Journal of the Mechanics and Physics of Solids</i> , 2022, 158, 104607.	4.8	10
81	Stress field around arbitrarily shaped cracks in two-dimensional elastic materials. <i>Physical Review E</i> , 2004, 69, 026127.	2.1	9
82	Autonomy and singularity in dynamic fracture. <i>Physical Review E</i> , 2010, 82, 015101.	2.1	9
83	Does mesoscopic elasticity control viscous slowing down in glassforming liquids?. <i>Journal of Chemical Physics</i> , 2021, 155, 074502.	3.0	9
84	Crack-microcrack interactions in dynamical fracture. <i>Physical Review E</i> , 2004, 70, 046107.	2.1	8
85	Free-boundary dynamics in elastoplastic amorphous solids: The circular hole problem. <i>Physical Review E</i> , 2007, 76, 026115.	2.1	8
86	Statistical Physics of Fracture Surfaces Morphology. <i>Journal of Statistical Physics</i> , 2006, 125, 1025-1064.	1.2	7
87	A nonlinear symmetry breaking effect in shear cracks. <i>Journal of the Mechanics and Physics of Solids</i> , 2012, 60, 1703-1709.	4.8	7
88	Nonmonotonicity of the Frictional Bimaterial Effect. <i>Journal of Geophysical Research: Solid Earth</i> , 2017, 122, 8270-8284.	3.4	6
89	Unified quantifier of mechanical disorder in solids. <i>Physical Review E</i> , 2021, 104, 035001.	2.1	6
90	Front propagation at the onset of plastic yielding. <i>Physical Review E</i> , 2008, 78, 026119.	2.1	5

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91	Oscillatory and tip-splitting instabilities in 2D dynamic fracture: The roles of intrinsic material length and time scales. <i>Journal of the Mechanics and Physics of Solids</i> , 2021, 151, 104372.	4.8	5
92	Spatial distribution of thermal energy in equilibrium. <i>Physical Review E</i> , 2015, 91, 060103.	2.1	4
93	Theory of unconventional singularities of frictional shear cracks. <i>Journal of the Mechanics and Physics of Solids</i> , 2021, 153, 104466.	4.8	4
94	Self-affine roughness of a crack front in heterogeneous media. <i>Physical Review E</i> , 2007, 76, 025101.	2.1	3
95	Necking instabilities in elastoviscoplastic materials. <i>Physical Review Materials</i> , 2018, 2, .	2.4	2
96	Gaussian fluctuations of spatially inhomogeneous polymers. <i>Soft Matter</i> , 2017, 13, 995-1005.	2.7	1
97	Periodic Crack Propagation Under Thermal Stress. <i>AIP Conference Proceedings</i> , 2004, , .	0.4	0
98	Preface to the special section on nano- and mesoscale friction. <i>Journal of Physics Condensed Matter</i> , 2016, 28, 130301.	1.8	0