Matthieu Wyart

List of Publications by Year
in descending order

90 papers	6,054 citations	66234 42 h-index	76769 74 g-index
93 all docs	93 docs citations	93 times ranked	3222 citing authors

#	ARTICLE	IF	CITATIONS
1	Fluctuations and response in financial markets: the subtle nature of â€˜randomâ€™ price changes. Quantitative Finance, 2004, 4, 176-190.	0.9	346
2	Effects of compression on the vibrational modes of marginally jammed solids. Physical Review E, 2005, 72, 051306.	0.8	333
3	Geometric origin of excess low-frequency vibrational modes in weakly connected amorphous solids. Europhysics Letters, 2005, 72, 486-492.	0.7	321
4	Allostery in Its Many Disguises: From Theory to Applications. Structure, 2019, 27, 566-578.	1.6	285
5	Dynamical susceptibility of glass formers: Contrasting the predictions of theoretical scenarios. Physical Review E, 2005, 71, 041505.	0.8	243
6	Proprioceptive Coupling within Motor Neurons Drives C.Âelegans Forward Locomotion. Neuron, 2012, 76, 750-761.	3.8	219
7	Scaling description of the yielding transition in soft amorphous solids at zero temperature. Proceedings of the National Academy of Sciences of the United States of America, 2014, 111, 14382-14387.	3.3	204
8	Elasticity of Floppy and Stiff Random Networks. Physical Review Letters, 2008, 101, 215501.	2.9	182
9	Effects of coordination and pressure on sound attenuation, boson peak and elasticity in amorphous solids. Soft Matter, 2014, 10, 5628.	1.2	167
10	Biomechanical analysis of gait adaptation in the nematode <i>Caenorhabditis elegans</i>. Proceedings of the National Academy of Sciences of the United States of America, 2010, 107, 20323-20328.	3.3	165
11	A unified framework for non-Brownian suspension flows and soft amorphous solids. Proceedings of the National Academy of Sciences of the United States of America, 2012, 109, 4798-4803.	3.3	153
12	Marginal Stability in Structural, Spin, and Electron Glasses. Annual Review of Condensed Matter Physics, 2015, 6, 177-200.	5.2	146
13	Relation between bidâ€"ask spread, impact and volatility in order-driven markets. Quantitative Finance, 2008, 8, 41-57.	0.9	126
14	Marginal Stability Constrains Force and Pair Distributions at Random Close Packing. Physical Review Letters, 2012, 109, 125502.	2.9	122
15	Low-energy non-linear excitations in sphere packings. Soft Matter, 2013, 9, 8252.	1.2	117
16	Excess Vibrational Modes and the Boson Peak in Model Glasses. Physical Review Letters, 2007, 98, .	2.9	106
17	Geometric interpretation of previtrification in hard sphere liquids. Journal of Chemical Physics, 2009, 131, 024504.	1.2	103
18	Fluctuations and response in financial markets: the subtle nature of â€˜randomâ€™ price changes. , 0, .		103

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19	Force distribution affects vibrational properties in hard-sphere glasses. Proceedings of the National Academy of Sciences of the United States of America, 2014, 111, 17054-17059.	3.3	100
20	Scaling of phononic transport with connectivity in amorphous solids. Europhysics Letters, 2010, 89, 64001.	0.7	97
21	Architecture and coevolution of allosteric materials. Proceedings of the National Academy of Sciences of the United States of America, 2017, 114, 2526-2531.	3.3	97
22	On the rigidity of a hard-sphere glass near random close packing. Europhysics Letters, 2006, 76, 149-155.	0.7	96
23	Energy Transport in Jammed Sphere Packings. Physical Review Letters, 2009, 102, 038001.	2.9	91
24	Breakdown of continuum elasticity in amorphous solids. Soft Matter, 2014, 10, 5085.	1.2	91
25	Heterogeneous dynamics, marginal stability and soft modes in hard sphere glasses. Journal of Statistical Mechanics: Theory and Experiment, 2007, 2007, L08003-L08003.	0.9	87
26	Unsteady flow and particle migration in dense, non-Brownian suspensions. Journal of Rheology, 2016, 60, 905-916.	1.3	87
27	Heat transport in model jammed solids. Physical Review E, 2010, 81, 021301.	0.8	85
28	On the density of shear transformations in amorphous solids. Europhysics Letters, 2014, 105, 26003.	0.7	82
29	Unified theory of inertial granular flows and non-Brownian suspensions. Physical Review E, 2015, 91, 062206.	0.8	80
30	Criticality in the Approach to Failure in Amorphous Solids. Physical Review Letters, 2015, 115, 168001.	2.9	64
31	Does a Growing Static Length Scale Control the Glass Transition?. Physical Review Letters, 2017, 119, 195501.	2.9	63
32	Phonon gap and localization lengths in floppy materials. Soft Matter, 2013, 9, 146-154.	1.2	61
33	Spatial structure of quasilocalized vibrations in nearly jammed amorphous solids. Physical Review E, 2018, 98, .	0.8	60
34	Elastoplastic description of sudden failure in athermal amorphous materials during quasistatic loading. Physical Review E, 2018, 98, .	0.8	58
35	Universality of jamming of nonspherical particles. Proceedings of the National Academy of Sciences of the United States of America, 2018, 115, 11736-11741.	3.3	52
36	Theory of the jamming transition at finite temperature. Journal of Chemical Physics, 2015, 142, 164503.	1.2	50

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37	Mean-Field Description of Plastic Flow in Amorphous Solids. Physical Review X, 2016, 6, .	2.8	49
38	Friction law and hysteresis in granular materials. Proceedings of the National Academy of Sciences of the United States of America, 2017, 114, 9284-9289.	3.3	49
39	A jamming transition from under- to over-parametrization affects generalization in deep learning. Journal of Physics A: Mathematical and Theoretical, 2019, 52, 474001.	0.7	49
40	Fast generation of ultrastable computer glasses by minimization of an augmented potential energy. Physical Review E, 2019, 99, 012106.	0.8	47
41	Self-referential behaviour, overreaction and conventions in financial markets. Journal of Economic Behavior and Organization, 2007, 63, 1-24.	1.0	46
42	Jamming transition as a paradigm to understand the loss landscape of deep neural networks. Physical Review E, 2019, 100, 012115.	0.8	44
43	Curling instability induced by swelling. Soft Matter, 2011, 7, 1506.	1.2	43
44	Granulation and bistability in non-Brownian suspensions. Rheologica Acta, 2014, 53, 755-764.	1.1	43
45	Phase diagram for inertial granular flows. Physical Review E, 2016, 94, 012904.	0.8	43
46	Why glass elasticity affects the thermodynamics and fragility of supercooled liquids. Proceedings of the National Academy of Sciences of the United States of America, 2013, 110, 6307-6312.	3.3	42
47	Statistical models for company growth. Physica A: Statistical Mechanics and Its Applications, 2003, 326, 241-255.	1.2	39
48	On variational arguments for vibrational modes near jamming. Europhysics Letters, 2016, 114, 26003.	0.7	39
49	Toward a microscopic description of flow near the jamming threshold. Europhysics Letters, 2012, 99, 58003.	0.7	36
50	Effect of friction on dense suspension flows of hard particles. Physical Review E, 2017, 95, 012605.	0.8	36
51	Correlations between Vibrational Entropy and Dynamics in Liquids. Physical Review Letters, 2010, 104, 095901.	2.9	35
52	Length scales and self-organization in dense suspension flows. Physical Review E, 2014, 89, 022305.	0.8	33
53	Theory for Swap Acceleration near the Glass and Jamming Transitions for Continuously Polydisperse Particles. Physical Review X, 2018, 8, .	2.8	33
54	Shear fronts in shear-thickening suspensions. Physical Review Fluids, 2018, 3, .	1.0	31

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55	Principles for Optimal Cooperativity in Allosteric Materials. Biophysical Journal, 2018, 114, 2787-2798.	0.2	30
56	Evolution of Covalent Networks under Cooling: Contrasting the Rigidity Window and Jamming Scenarios. Physical Review Letters, 2014, 113, 215504.	2.9	26
57	Theory for the density of interacting quasilocalized modes in amorphous solids. Physical Review E, 2019, 99, 023003.	0.8	24
58	Fluctuations and Response in Financial Markets: The Subtle Nature of 'Random' Price Changes. SSRN Electronic Journal, 2003, , .	0.4	23
59	How collective asperity detachments nucleate slip at frictional interfaces. Proceedings of the National Academy of Sciences of the United States of America, 2019, 116, 23977-23983.	3.3	22
60	The jamming scenarioâ€"an introduction and outlook. , 2011, , 298-340.		22
61	Simulations of driven overdamped frictionless hard spheres. Computer Physics Communications, 2013, 184, 628-637.	3.0	21
62	Inferring the flow properties of epithelial tissues from their geometry. New Journal of Physics, 2021, 23, 033004.	1.2	21
63	Microscopic processes controlling the Herschel-Bulkley exponent. Physical Review E, 2018, 97, 012603.	0.8	19
64	Disentangling feature and lazy training in deep neural networks. Journal of Statistical Mechanics: Theory and Experiment, 2020, 2020, 113301.	0.9	19
65	Thermal origin of quasilocalized excitations in glasses. Physical Review E, 2020, 102, 062110.	0.8	17
66	Scale-free channeling patterns near the onset of erosion of sheared granular beds. Proceedings of the National Academy of Sciences of the United States of America, 2016, 113, 11788-11793.	3.3	16
67	Evaluating Gene Expression Dynamics Using Pairwise RNA FISH Data. PLoS Computational Biology, 2010, 6, e1000979.	1.5	15
68	Evidence for Marginal Stability in Emulsions. Physical Review Letters, 2016, 117, 208001.	2.9	14
69	Interparticle Friction Leads to Nonmonotonic Flow Curves and Hysteresis in Viscous Suspensions. Physical Review X, 2019, 9, .	2.8	14
70	Direct coupling analysis of epistasis in allosteric materials. PLoS Computational Biology, 2020, 16, e1007630.	1.5	14
71	Effect of particle collisions in dense suspension flows. Physical Review E, 2016, 94, 022601.	0.8	13
72	Mechanics of Allostery: Contrasting the Induced Fit and Population Shift Scenarios. Biophysical Journal, 2019, 117, 1954-1962.	0.2	13

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73	Asymptotic learning curves of kernel methods: empirical data versus teacherâ€"student paradigm. Journal of Statistical Mechanics: Theory and Experiment, 2020, 2020, 124001.	0.9	13
74	Statistical Models for Company Growth. SSRN Electronic Journal, 2003, , .	0.4	11
75	On the dependence of the avalanche angle on the granular layer thickness. Europhysics Letters, 2009, 85, 24003.	0.7	10
76	Jamming with Tunable Roughness. Physical Review Letters, 2020, 124, 208001.	2.9	9
77	Nonlocal Effects Reflect the Jamming Criticality in Frictionless Granular Flows Down Inclines. Physical Review Letters, 2021, 126, 228002.	2.9	9
78	Landscape and training regimes in deep learning. Physics Reports, 2021, 924, 1-18.	10.3	9
79	Thermally activated flow in models of amorphous solids. Physical Review E, 2021, 104, 025010.	0.8	9
80	Model for the erosion onset of a granular bed sheared by a viscous fluid. Physical Review E, 2016, 93, 012903.	0.8	8
81	Edge mode amplification in disordered elastic networks. Soft Matter, 2017, 13, 5795-5801.	1.2	8
82	Adaptive elastic networks as models of supercooled liquids. Physical Review E, 2015, 92, 022310.	0.8	7
83	Dynamics and Correlations among Soft Excitations in Marginally Stable Glasses. Physical Review Letters, 2015, 114, 247208.	2.9	7
84	Hydrodynamic-driven morphogenesis of karst draperies: spatio-temporal analysis of the two-dimensional impulse response. Journal of Fluid Mechanics, 2021, 910, .	1.4	7
85	Infinitesimal asphericity changes the universality of the jamming transition. Journal of Statistical Mechanics: Theory and Experiment, 2020, 2020, 033302.	0.9	6
86	Mean-field description for the architecture of low-energy excitations in glasses. Physical Review E, 2022, 105, 044601.	0.8	6
87	Scaling description of non-local rheology. Soft Matter, 2017, 13, 3794-3801.	1.2	4
88	Self Referential Behaviour, Overreaction and Conventions in Financial Markets. SSRN Electronic Journal, 0, , .	0.4	4
89	Unifying Suspension and Granular flows near Jamming. EPJ Web of Conferences, 2017, 140, 01003.	0.1	2
90	Elasticity of Soft Particles and Colloids near the Jamming Threshold. , 2011, , 195-206.		1