RÃ©mi Monasson

List of Publications by Year
in descending order

68 papers	3,999 citations	186265 28 h-index	133252 59 g-index
83 all docs	83 docs citations	83 times ranked	2450 citing authors

#	Article	IF	Citations
1	Determining computational complexity from characteristic â€˜phase transitionsâ€™. Nature, 1999, 400, 133-137.	27.8	617
2	Structural Glass Transition and the Entropy of the Metastable States. Physical Review Letters, 1995, 75, 2847-2850.	7.8	387
3	Statistical mechanics of the randomK-satisfiability model. Physical Review E, 1997, 56, 1357-1370.	2.1	197
4	An evolution-based model for designing chorismate mutase enzymes. Science, 2020, 369, 440-445.	12.6	195
5	Inverse statistical physics of protein sequences: a key issues review. Reports on Progress in Physics, 2018, 81, 032601.	20.1	178
6	Neuronal couplings between retinal ganglion cells inferred by efficient inverse statistical physics methods. Proceedings of the National Academy of Sciences of the United States of America, 2009, 106, 14058-14062.	7.1	160
7	Entropy of theK-Satisfiability Problem. Physical Review Letters, 1996, 76, 3881-3885.	7.8	159
8	Statistical mechanics methods and phase transitions in optimization problems. Theoretical Computer Science, 2001, 265, 3-67.	0.9	130
9	Optimization problems and replica symmetry breaking in finite connectivity spin glasses. Journal of Physics A, 1998, 31, 513-529.	1.6	128
10	Statistical Mechanics of Torque Induced Denaturation of DNA. Physical Review Letters, 1999, 83, 5178-5181.	7.8	123
11	From Principal Component to Direct Coupling Analysis of Coevolution in Proteins: Low-Eigenvalue Modes are Needed for Structure Prediction. PLoS Computational Biology, 2013, 9, e1003176.	3.2	113
12	Direct-Coupling Analysis of nucleotide coevolution facilitates RNA secondary and tertiary structure prediction. Nucleic Acids Research, 2015, 43, gkv932.	14.5	93
13	Sensorimotor computation underlying phototaxis in zebrafish. Nature Communications, 2017, 8, 651.	12.8	93
14	Learning protein constitutive motifs from sequence data. ELife, 2019, 8, .	6.0	89
15	Trajectories in Phase Diagrams, Growth Processes, and Computational Complexity: How Search Algorithms Solve the 3-Satisfiability Problem. Physical Review Letters, 2001, 86, 1654-1657.	7.8	80
16	Neoantigen quality predicts immunoediting in survivors of pancreatic cancer. Nature, 2022, 606, 389-395.	27.8	80
17	Tricritical points in random combinatorics: the -SAT case. Journal of Physics A, 1998, 31, 9209-9217.	1.6	74
18	Theoretical study of collective modes in DNA at ambient temperature. Journal of Chemical Physics, 2000, 112, 10017-10033.	3.0	72

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19	Distinguishing the immunostimulatory properties of noncoding RNAs expressed in cancer cells. Proceedings of the National Academy of Sciences of the United States of America, 2015, 112, 15154-15159.	7.1	69
20	Weight Space Structure and Internal Representations: A Direct Approach to Learning and Generalization in Multilayer Neural Networks. Physical Review Letters, 1995, 75, 2432-2435.	7.8	62
21	2+p-SAT: Relation of typical-case complexity to the nature of the phase transition. Random Structures and Algorithms, 1999, 15, 414-435.	1.1	62
22	Adaptive Cluster Expansion for the Inverse Ising Problem: Convergence, Algorithm and Tests. Journal of Statistical Physics, 2012, 147, 252-314.	1.2	60
23	On Large Deviation Properties of Erdï¿½s?Rï¿½nyi Random Graphs. Journal of Statistical Physics, 2004, 117, 387-426.	1.2	48
24	Relaxation and metastability in a local search procedure for the random satisfiability problem. Physical Review E, 2003, 67, 066103.	2.1	43
25	Benchmarking Inverse Statistical Approaches for Protein Structure and Design with Exactly Solvable Models. PLoS Computational Biology, 2016, 12, e1004889.	3.2	43
26	Entropy of particle packings: An illustration on a toy model. Physica A: Statistical Mechanics and Its Applications, 1997, 236, 395-410.	2.6	39
27	Quantitative theory of entropic forces acting on constrained nucleotide sequences applied to viruses. Proceedings of the National Academy of Sciences of the United States of America, 2014, 111, 5054-5059.	7.1	37
28	Can rare SAT formulae be easily recognized? On the efficiency of message-passing algorithms forK-SAT at large clause-to-variable ratios. Journal of Physics A: Mathematical and Theoretical, 2007, 40, 867-886.	2.1	36
29	Theory of Spike Timing-Based Neural Classifiers. Physical Review Letters, 2010, 105, 218102.	7.8	32
30	Functional coupling networks inferred from prefrontal cortex activity show experience-related effective plasticity. Network Neuroscience, 2017, 1, 275-301.	2.6	27
31	Circuits in random graphs: from local trees to global loops. Journal of Statistical Mechanics: Theory and Experiment, 2004, 2004, P09004.	2.3	26
32	RBM-MHC: A Semi-Supervised Machine-Learning Method for Sample-Specific Prediction of Antigen Presentation by HLA-I Alleles. Cell Systems, 2021, 12, 195-202.e9.	6.2	26
33	Adaptation of olfactory receptor abundances for efficient coding. ELife, 2019, 8, .	6.0	23
34	Quantitative modeling of the effect of antigen dosage on B-cell affinity distributions in maturating germinal centers. ELife, 2020, 9, .	6.0	23
35	Direct coevolutionary couplings reflect biophysical residue interactions in proteins. Journal of Chemical Physics, 2016, 145, 174102.	3.0	22
36	On the Entropy of Protein Families. Journal of Statistical Physics, 2016, 162, 1267-1293.	1.2	22

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37	Functional connectivity models for decoding of spatial representations from hippocampal CA1 recordings. Journal of Computational Neuroscience, 2017, 43, 17-33.	1.0	20
38	Learning Compositional Representations of Interacting Systems with Restricted Boltzmann Machines: Comparative Study of Lattice Proteins. Neural Computation, 2019, 31, 1671-1717.	2.2	20
39	Phase transitions and complexity in computer science: an overview of the statistical physics approach to the random satisfiability problem. Physica A: Statistical Mechanics and Its Applications, 2002, 306, 381-394.	2.6	19
40	Fast inference of interactions in assemblies of stochastic integrate-and-fire neurons from spike recordings. Journal of Computational Neuroscience, 2011, 31, 199-227.	1.0	18
41	Functional networks from inverse modeling of neural population activity. Current Opinion in Systems Biology, 2017, 3, 103-110.	2.6	18
42	Integration and multiplexing of positional and contextual information by the hippocampal network. PLoS Computational Biology, 2018, 14, e1006320.	3.2	18
43	Analytical and numerical study of internal representations in multilayer neural networks with binary weights. Physical Review E, 1996, 54, 717-736.	2.1	15
44	The Heterogeneous Landscape and Early Evolution of Pathogen-Associated CpG Dinucleotides in SARS-CoV-2. Molecular Biology and Evolution, 2021, 38, 2428-2445.	8.9	15
45	Inference of compressed Potts graphical models. Physical Review E, 2020, 101, 012309.	2.1	14
46	Estimating the principal components of correlation matrices from all their empirical eigenvectors. Europhysics Letters, 2015, 112, 50001.	2.0	13
47	Capacity-Resolution Trade-Off in the Optimal Learning of Multiple Low-Dimensional Manifolds by Attractor Neural Networks. Physical Review Letters, 2020, 124, 048302.	7.8	13
48	Innovation Rather than Improvement: A Solvable High-Dimensional Model Highlights the Limitations of Scalar Fitness. Journal of Statistical Physics, 2018, 172, 74-104.	1.2	12
49	Can Grid Cell Ensembles Represent Multiple Spaces?. Neural Computation, 2019, 31, 2324-2347.	2.2	12
50	Barriers and dynamical paths in alternating Gibbs sampling of restricted Boltzmann machines. Physical Review E, 2021, 104, 034109.	2.1	11
51	Exponentially hard problems are sometimes polynomial, a large deviation analysis of search algorithms for the random satisfiability problem, and its application to stop-and-restart resolutions. Physical Review E, 2002, 66, 037101.	2.1	10
52	Heuristic average-case analysis of the backtrack resolution of random 3-satisfiability instances. Theoretical Computer Science, 2004, 320, 345-372.	0.9	9
53	â€˜Place-cellâ€™ emergence and learning of invariant data with restricted Boltzmann machines: breaking and dynamical restoration of continuous symmetries in the weight space. Journal of Physics A: Mathematical and Theoretical, 2020, 53, 174002.	2.1	9
54	Probing T-cell response by sequence-based probabilistic modeling. PLoS Computational Biology, 2021, 17, e1009297.	3.2	9

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55	The dynamics of proving uncolourability of large random graphs: I. Symmetric colouring heuristic. Journal of Physics A, 2003, 36, 11055-11067.	1.6	8
56	Learning Probabilities From Random Observables in High Dimensions: The Maximum Entropy Distribution and Others. Journal of Statistical Physics, 2015, 161, 598-632.	1.2	8
57	Improving sequence-based modeling of protein families using secondary-structure quality assessment. Bioinformatics, 2021, 37, 4083-4090.	4.1	6
58	Parameters and determinants of responses to selection in antibody libraries. PLoS Computational Biology, 2021, 17, e1008751.	3.2	5
59	Some remarks on hierarchical replica symmetry breaking in finite-connectivity systems. The Philosophical Magazine: Physics of Condensed Matter B, Statistical Mechanics, Electronic, Optical and Magnetic Properties, 1998, 77, 1515-1521.	0.6	4
60	2+p-SAT: Relation of typical-case complexity to the nature of the phase transition. , 1999, 15, 414.		4
61	Reconstruction and Identification of DNA Sequence Landscapes from Unzipping Experiments at Equilibrium. Biophysical Journal, 2014, 106, 430-439.	0.5	1
62	Low-Dimensional Manifolds Support Multiplexed Integrations in Recurrent Neural Networks. Neural Computation, 2021, 33, 1063-1112.	2.2	1
63	Spectrum of multispace Euclidean random matrices. Physical Review E, 2020, 101, 052133.	2.1	1
64	Analysis of Backtracking Procedures for Random Decision Problems. , 2005, , 139-181.		0
65	Restarts and exponential acceleration of the Davis-Putnam-Loveland-Logemann algorithm: A large deviation analysis of the generalized unit clause heuristic for random 3-SAT. Annals of Mathematics and Artificial Intelligence, 2005, 43, 153-172.	1.3	0
66	Lorenzo Saitta, Attilio Giordana, Antoine CornuÃ©jols: Phase Transitions in Machine Learning. Journal of Statistical Physics, 2012, 149, 1161-1163.	1.2	0
67	Inference of principal components of noisy correlation matrices with prior information. , 2016, , .		0
68	Survival probability and size of lineages in antibody affinity maturation. Physical Review E, 2021, 103, 052413.	2.1	0