Paolo De Los Rios

List of Publications by Year
in descending order

120 papers	6,302 citations	71102 41 h-index	76900 74 g-index
131 all docs	131 docs citations	131 times ranked	6868 citing authors

#	Article	IF	Citations
1	J-domain protein chaperone circuits in proteostasis and disease. Trends in Cell Biology, 2023, 33, 30-47.	7.9	30
2	Dissipation-driven selection of states in non-equilibrium chemical networks. Communications Chemistry, 2021, 4, .	4.5	19
3	Ant behavioral maturation is mediated by a stochastic transition between two fundamental states. Current Biology, 2021, 31, 2253-2260.e3.	3.9	19
4	Equilibrium and non-equilibrium furanose selection in the ribose isomerisation network. Nature Communications, 2021, 12, 2749.	12.8	17
5	Dissipation-Driven Selection under Finite Diffusion: Hints from Equilibrium and Separation of Time Scales. Entropy, 2021, 23, 1068.	2.2	1
6	Relief of ParB autoinhibition by <i>parS</i> DNA catalysis and recycling of ParB by CTP hydrolysis promote bacterial centromere assembly. Science Advances, 2021, 7, eabj2854.	10.3	35
7	Repair or Degrade: the Thermodynamic Dilemma of Cellular Protein Quality-Control. Frontiers in Molecular Biosciences, 2021, 8, 768888.	3.5	17
8	Protein Structural Information and Evolutionary Landscape by In Vitro Evolution. Molecular Biology and Evolution, 2020, 37, 1179-1192.	8.9	24
9	Molecular dissection of amyloid disaggregation by human HSP70. Nature, 2020, 587, 483-488.	27.8	153
10	How Complex Molecules Could Possibly be Stable at the Dawn of Life: Out of Equilibrium Dissipation Shapes Selection. Biophysical Journal, 2020, 118, 611a.	0.5	0
11	Membraneless organelles: phasing out of equilibrium. Emerging Topics in Life Sciences, 2020, 4, 343-354.	2.6	48
12	Self-organization of <i>parS</i> centromeres by the ParB CTP hydrolase. Science, 2019, 366, 1129-1133.	12.6	110
13	DNA-segment-capture model for loop extrusion by structural maintenance of chromosome (SMC) protein complexes. Nucleic Acids Research, 2019, 47, 6956-6972.	14.5	92
14	Efficient conversion of chemical energy into mechanical work by Hsp70 chaperones. ELife, 2019, 8, .	6.0	26
15	Chaperones convert the energy from ATP into the nonequilibrium stabilization of native proteins. Nature Chemical Biology, 2018, 14, 388-395.	8.0	78
16	Interplay between cost and benefits triggers nontrivial vaccination uptake. Physical Review E, 2018, 97, 032308.	2.1	17
17	The cold denaturation of IscU highlights structureâ€"function dualism in marginally stable proteins. Communications Chemistry, 2018, 1, .	4.5	19
18	Hyperplectonemes: A Higher Order Compact and Dynamic DNA Self-Organization. Nano Letters, 2017, 17, 1938-1948.	9.1	34

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19	Shape of a Stretched Polymer. Physical Review Letters, 2017, 119, 037801.	7.8	8
20	Thermodynamic Bounds on the Ultra- and Infra-affinity of Hsp70 for Its Substrates. Biophysical Journal, 2017, 113, 362-370.	0.5	12
21	New Techniques for Ancient Proteins: Direct Coupling Analysis Applied on Proteins Involved in Iron Sulfur Cluster Biogenesis. Frontiers in Molecular Biosciences, 2017, 4, 40.	3.5	7
22	Evolution of an intricate J-protein network driving protein disaggregation in eukaryotes. ELife, 2017, 6, .	6.0	60
23	Modeling Hsp70/Hsp40 interaction by multi-scale molecular simulations and coevolutionary sequence analysis. ELife, 2017, 6, .	6.0	48
24	Simulation and Theory of Antibody Binding to Crowded Antigen-Covered Surfaces. PLoS Computational Biology, 2016, 12, e1004752.	3.2	49
25	Hsp70 chaperones use ATP to remodel native protein oligomers and stable aggregates by entropic pulling. Nature Structural and Molecular Biology, 2016, 23, 766-769.	8.2	30
26	Quantifying the role of chaperones in protein translocation by computational modeling. Frontiers in Molecular Biosciences, 2015, 2, 8.	3.5	6
27	Non-equilibrium conformational dynamics in the function of molecular chaperones. Current Opinion in Structural Biology, 2015, 30, 161-169.	5.7	25
28	Quantitative proteomics of heat-treated human cells show an across-the-board mild depletion of housekeeping proteins to massively accumulate few HSPs. Cell Stress and Chaperones, 2015, 20, 605-620.	2.9	69
29	Large-Scale Conformational Transitions and Dimerization Are Encoded in the Amino-Acid Sequences of Hsp70 Chaperones. PLoS Computational Biology, 2015, 11, e1004262.	3.2	61
30	Universal Behavior in the Mesoscale Properties of Amyloid Fibrils. Physical Review Letters, 2014, 113, 268103.	7.8	44
31	Hydrophobic hydration of poly-N-isopropyl acrylamide: a matter of the mean energetic state of water. Scientific Reports, 2014, 4, 4377.	3.3	139
32	Real-Time Monitoring of Protein Conformational Changes Using a Nano-Mechanical Sensor. PLoS ONE, 2014, 9, e103674.	2.5	26
33	Hsp70 chaperones are non-equilibrium machines that achieve ultra-affinity by energy consumption. ELife, 2014, 3, e02218.	6.0	98
34	GroEL and CCT are catalytic unfoldases mediating out-of-cage polypeptide refolding without ATP. Proceedings of the National Academy of Sciences of the United States of America, 2013, 110, 7199-7204.	7.1	75
35	Diffusion-limited reactions in crowded environments: a local density approximation. Journal of Physics Condensed Matter, 2013, 25, 375104.	1.8	10
36	The effect of crowding and confinement: a comparison of Yfh1 stability in different environments. Physical Biology, 2013, 10, 045002.	1.8	32

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37	Stochastic fluctuations and the detectability limit of network communities. Physical Review E, 2013, 88, 060801.	2.1	3
38	Explaining the length threshold of polyglutamine aggregation. Journal of Physics Condensed Matter, 2012, 24, 244105.	1.8	6
39	Chaperoning protein evolution. Nature Chemical Biology, 2012, 8, 226-228.	8.0	20
40	First-order coil-globule transition driven by vibrational entropy. Nature Communications, 2012, 3, 1065.	12.8	32
41	Probing the different chaperone activities of the bacterial HSP70â€HSP40 system using a thermolabile luciferase substrate. Proteins: Structure, Function and Bioinformatics, 2011, 79, 1991-1998.	2.6	33
42	Vibrational entropy and the structural organization of proteins. European Physical Journal E, 2010, 33, 89-96.	1.6	5
43	The kinetic parameters and energy cost of the Hsp70 chaperone as a polypeptide unfoldase. Nature Chemical Biology, 2010, 6, 914-920.	8.0	205
44	Understanding amyloid aggregation by statistical analysis of atomic force microscopy images. Nature Nanotechnology, 2010, 5, 423-428.	31.5	526
45	Diffusion-Limited Reactions in Crowded Environments. Physical Review Letters, 2010, 105, 120601.	7.8	58
46	Extended Navigability of Small World Networks: Exact Results and New Insights. Physical Review Letters, 2009, 102, 238703.	7.8	31
47	Temperature Dependence of Normal Mode Reconstructions of Protein Dynamics. Physical Review Letters, 2009, 102, 218104.	7.8	7
48	Elastic Membrane Heterogeneity of Living Cells Revealed by Stiff Nanoscale Membrane Domains. Biophysical Journal, 2008, 94, 1521-1532.	0.5	83
49	Cold Denaturation of Yeast Frataxin Offers the Clue to Understand the Effect of Alcohols on Protein Stability. Journal of the American Chemical Society, 2008, 130, 9963-9970.	13.7	59
50	Spectral Coarse Graining and Synchronization in Oscillator Networks. Physical Review Letters, 2008, 100, 174104.	7.8	68
51	Structural Efficiency of Percolated Landscapes in Flow Networks. PLoS ONE, 2008, 3, e3654.	2.5	6
52	Bottleneck Genes and Community Structure in the Cell Cycle Network of S. pombe. PLoS Computational Biology, 2007, 3, e103.	3.2	23
53	Interfaces and the edge percolation map of random directed networks. Physical Review E, 2007, 76, 056121.	2.1	17
54	Discrete Breathers in Nonlinear Network Models of Proteins. Physical Review Letters, 2007, 99, 238104.	7.8	80

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55	Uncovering the topology of configuration space networks. Physical Review E, 2007, 76, 026113.	2.1	29
56	On the origin of the boson peak in globular proteins. Philosophical Magazine, 2007, 87, 631-641.	1.6	1
57	Complex network analysis of free-energy landscapes. Proceedings of the National Academy of Sciences of the United States of America, 2007, 104, 1817-1822.	7.1	159
58	A dynamical study of antibodyâ€"antigen encounter reactions. Physical Biology, 2007, 4, 172-180.	1.8	20
59	EXISTENCE, COST AND ROBUSTNESS OF SPATIAL SMALL-WORLD NETWORKS. International Journal of Bifurcation and Chaos in Applied Sciences and Engineering, 2007, 17, 2331-2342.	1.7	3
60	Fractal Dimension and Localization of DNA Knots. Physical Review Letters, 2007, 98, 058102.	7.8	109
61	Diffusion-Limited Unbinding of Small Peptides from PDZ Domains. Journal of Physical Chemistry B, 2007, 111, 11057-11063.	2.6	5
62	Mechanisms of Quantum Dot Energy Engineering by Metalorganic Vapor Phase Epitaxy on Patterned Nonplanar Substrates. Nano Letters, 2007, 7, 1282-1285.	9.1	51
63	Spectral Coarse Graining of Complex Networks. Physical Review Letters, 2007, 99, 038701.	7.8	95
64	The mechanism of Hsp70 chaperones: (entropic) pulling the models together. Trends in Biochemical Sciences, 2007, 32, 372-380.	7.5	156
65	Numerical Simulation of Gel Electrophoresis of DNA Knots in Weak and Strong Electric Fields. Biophysical Journal, 2006, 90, 3100-3105.	0.5	37
66	Simulations of electrophoretic collisions of DNA knots with gel obstacles. Journal of Physics Condensed Matter, 2006, 18, S161-S171.	1.8	11
67	Hsp70 chaperones accelerate protein translocation and the unfolding of stable protein aggregates by entropic pulling. Proceedings of the National Academy of Sciences of the United States of America, 2006, 103, 6166-6171.	7.1	220
68	Physical realizability of small-world networks. Physical Review E, 2006, 73, 026114.	2.1	52
69	Glasslike Structure of Globular Proteins and the Boson Peak. Physical Review Letters, 2006, 96, 198103.	7.8	18
70	Dynamics of antibodies from cryo-electron tomography. Biophysical Chemistry, 2005, 115, 235-240.	2.8	39
71	Anticooperativity in diffusion-controlled reactions with pairs of anisotropic domains: a model for the antigenâ€"antibody encounter. European Biophysics Journal, 2005, 34, 899-911.	2.2	18
72	Effective interactions between chaotropic agents and proteins. Proteins: Structure, Function and Bioinformatics, 2005, 61, 492-499.	2.6	81

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73	Slow Energy Relaxation of Macromolecules and Nanoclusters in Solution. Physical Review Letters, 2005, 94, 145502.	7.8	25
74	Finding instabilities in the community structure of complex networks. Physical Review E, 2005, 72, 056135.	2.1	109
75	Scaling Exponents and Probability Distributions of DNA End-to-End Distance. Physical Review Letters, 2005, 95, 158105.	7.8	124
76	Functional Dynamics of PDZ Binding Domains: A Normal-Mode Analysis. Biophysical Journal, 2005, 89, 14-21.	0.5	124
77	MONTE-CARLO SIMULATIONS OF GEL-ELECTROPHORESIS OF DNA KNOTS. Series on Knots and Everything, 2005, , 149-159.	0.0	1
78	Role of clustering and gridlike ordering in epidemic spreading. Physical Review E, 2004, 69, 066116.	2.1	50
79	Solvent-induced micelle formation in a hydrophobic interaction model. Physical Review E, 2004, 69, 061924.	2.1	7
80	Preferential exchange: Strengthening connections in complex networks. Physical Review E, 2004, 70, 027102.	2.1	10
81	Widespread occurrence of the inverse square distribution in social sciences and taxonomy. Physical Review E, 2004, 69, 035101.	2.1	15
82	Active Solubilization and Refolding of Stable Protein Aggregates By Cooperative Unfolding Action of Individual Hsp70 Chaperones. Journal of Biological Chemistry, 2004, 279, 37298-37303.	3.4	95
83	Freezing immunoglobulins to see them move. Proceedings of the National Academy of Sciences of the United States of America, 2004, 101, 6466-6471.	7.1	66
84	Oscillation modes of microtubules. Biology of the Cell, 2004, 96, 697-700.	2.0	59
85	Exploration of scale-free networks. European Physical Journal B, 2004, 38, 201-204.	1.5	59
86	Statistical features of drainage basins in mars channel networks. European Physical Journal B, 2004, 38, 387-391.	1.5	31
87	Cluster approximations for epidemic processes: a systematic description of correlations beyond the pair level. Journal of Theoretical Biology, 2004, 229, 1-11.	1.7	34
88	Kosmotropes and chaotropes: modelling preferential exclusion, binding and aggregate stability. Biophysical Chemistry, 2004, 112, 45-57.	2.8	167
89	Chaotropic effect and preferential binding in a hydrophobic interaction model. Journal of Chemical Physics, 2003, 119, 7988-8001.	3.0	13
90	Effective Interactions Cannot Replace Solvent Effects in a Lattice Model of Proteins. Physical Review Letters, 2003, 91, 258102.	7.8	29

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91	Hydrophobic Interaction Model for Upper and Lower Critical Solution Temperatures. Macromolecules, 2003, 36, 5845-5853.	4.8	37
92	Quantitative description and modeling of real networks. Physical Review E, 2003, 68, 047101.	2.1	12
93	Interactions between synaptic vesicle fusion proteins explored by atomic force microscopy. Proceedings of the National Academy of Sciences of the United States of America, 2003, 100, 8736-8741.	7.1	79
94	Exploration Bias of Complex Networks. AIP Conference Proceedings, 2003, , .	0.4	4
95	Design of lattice proteins with explicit solvent. Physical Review E, 2002, 66, 061911.	2.1	17
96	Scale-Free Networks from Varying Vertex Intrinsic Fitness. Physical Review Letters, 2002, 89, 258702.	7.8	612
97	The local minority game. Physica A: Statistical Mechanics and Its Applications, 2002, 303, 217-225.	2.6	40
98	Cold and warm denaturation of proteins. Journal of Biological Physics, 2001, 27, 229-241.	1.5	40
99	Power law size distribution of supercritical random trees. Europhysics Letters, 2001, 56, 898-903.	2.0	26
100	Bethe approximation for self-interacting lattice trees. Europhysics Letters, 2001, 53, 176-182.	2.0	10
101	Cold and warm swelling of hydrophobic polymers. Physical Review E, 2001, 63, 031802.	2.1	34
102	Statistical analysis of genealogical trees for polygamic species. Physical Review E, 2000, 61, 5620-5623.	2.1	1
103	Berry phase and ground-state symmetry inHâŠ—hdynamical Jahn-Teller systems. Physical Review B, 2000, 62, 29-32.	3.2	25
104	Discretized Diffusion Processes. Physical Review Letters, 2000, 85, 4848-4851.	7.8	10
105	Putting proteins back into water. Physical Review E, 2000, 62, 8449-8452.	2.1	61
106	Universal1/fNoise from Dissipative Self-Organized Criticality Models. Physical Review Letters, 1999, 82, 472-475.	7.8	66
107	Universality and Crossover of Directed Polymers and Growing Surfaces. Physical Review Letters, 1999, 82, 4236-4239.	7.8	5
108	Levy-nearest-neighbors Bak-Sneppen model. Physical Review E, 1999, 60, R1111-R1114.	2.1	5

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109	The rÃ1e of the Berry phase in dynamical Jahn-Teller systems. Journal of Physics Condensed Matter, 1998, 10, 8485-8495.	1.8	15
110	Critical exponents of the anisotropic Bak-Sneppen model. Physical Review E, 1998, 58, 7141-7145.	2.1	15
111	High-Dimensional Bak-Sneppen Model. Physical Review Letters, 1998, 80, 5746-5749.	7.8	31
112	Expansion Around the Mean-Field Solution of the Bak-Sneppen Model. Physical Review Letters, 1998, 80, 1457-1460.	7.8	24
113	Self-organized criticality in deterministic systems with disorder. Physical Review E, 1998, 57, 6451-6459.	2.1	4
114	Directed Polymers on a Factorized Disorder Landscape. Physical Review Letters, 1998, 81, 1023-1026.	7.8	8
115	Polymers with a bimodal disorder distribution and directed percolation. Journal of Physics A, 1997, 30, L617-L621.	1.6	2
116	Self-organized criticality driven by deterministic rules. Physical Review E, 1997, 56, 4876-4879.	2.1	10
117	Model of correlated evolution. Physical Review E, 1996, 54, 6053-6057.	2.1	10
118	Optimal path and directed percolation. Physical Review E, 1996, 53, R2029-R2032.	2.1	5
119	Dynamical Jahn-Teller effect and Berry phase in positively charged fullerenes: Basic considerations. Physical Review B, 1996, 54, 7157-7167.	3.2	34
120	Reentrant behaviour in a highly anisotropic system. Physica A: Statistical Mechanics and Its Applications, 1994, 203, 640-654.	2.6	5