Michel Peyrard

List of Publications by Year
in descending order

96 papers	5,323 citations	109137 35 h-index	79541 73 g-index
96 all docs	96 docs citations	96 times ranked	1964 citing authors

#	Article	IF	Citations
1	Entropy-driven DNA denaturation. Physical Review E, 1993, 47, R44-R47.	0.8	413
2	Nonlinear dynamics and statistical physics of DNA. Nonlinearity, 2004, 17, R1-R40.	0.6	397
3	Modulational instabilities in discrete lattices. Physical Review A, 1992, 46, 3198-3205.	1.0	391
4	Dynamics and thermodynamics of a nonlinear model for DNA denaturation. Physical Review E, 1993, 47, 684-695.	0.8	346
5	Kink dynamics in the highly discrete sine-Gordon system. Physica D: Nonlinear Phenomena, 1984, 14, 88-102.	1.3	324
6	Kink-antikink interactions in the double sine-Gordon equation. Physica D: Nonlinear Phenomena, 1986, 19, 165-205.	1.3	259
7	Energy localization in nonlinear lattices. Physical Review Letters, 1993, 70, 3935-3938.	2.9	209
8	Internal Modes of Solitary Waves. Physical Review Letters, 1998, 80, 5032-5035.	2.9	192
9	Modulational instability: first step towards energy localization in nonlinear lattices. Nonlinearity, 1997, 10, 617-630.	0.6	158
10	Entropy-driven transition in a one-dimensional system. Physical Review E, 1995, 51, 4027-4040.	0.8	151
11	Kink-antikink interactions in a modified sine-Gordon model. Physica D: Nonlinear Phenomena, 1983, 9, 33-51.	1.3	145
12	Helicoidal model for DNA opening. Physics Letters, Section A: General, Atomic and Solid State Physics, 1999, 253, 358-369.	0.9	141
13	Order of the Phase Transition in Models of DNA Thermal Denaturation. Physical Review Letters, 2000, 85, 6-9.	2.9	108
14	Interaction of discrete breathers with impurity modes. Physical Review E, 1994, 49, 3400-3411.	0.8	106
15	Dynamical Transitions in Correlated Driven Diffusion in a Periodic Potential. Physical Review Letters, 1997, 78, 1295-1298.	2.9	94
16	Solitary wave collisions revisited. Physica D: Nonlinear Phenomena, 1986, 18, 47-53.	1.3	90
17	The pathway to energy localization in nonlinear lattices. Physica D: Nonlinear Phenomena, 1998, 119, 184-199.	1.3	88
18	Thermal denaturation of a helicoidal DNA model. Physical Review E, 2003, 68, 061909.	0.8	85

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19	Generation of high-energy localized vibrational modes in nonlinear Klein-Gordon lattices. Physical Review E, 1996, 53, 4143-4152.	0.8	84
20	Nonlinear modes in coupled rotator models. Physica D: Nonlinear Phenomena, 1996, 92, 140-163.	1.3	75
21	A twist opening model for DNA. Journal of Biological Physics, 1999, 24, 97-114.	0.7	70
22	The Fermiâ€“Pastaâ€“Ulam â€˜numerical experimentâ€™: history and pedagogical perspectives. European Journal of Physics, 2005, 26, S3-S11.	0.3	65
23	Nonlinear mobility of the generalized Frenkel-Kontorova model. Physical Review E, 1997, 55, 3598-3612.	0.8	64
24	Can One Predict DNA Transcription Start Sites by Studying Bubbles?. Physical Review Letters, 2005, 95, 218104.	2.9	62
25	Nonlinear Analysis of the Dynamics of DNA Breathing. Journal of Biological Physics, 2009, 35, 73-89.	0.7	61
26	Discreteness effects on non-topological kink soliton dynamics in nonlinear lattices. Physica D: Nonlinear Phenomena, 1986, 19, 268-281.	1.3	55
27	Modelling DNA at the mesoscale: a challenge for nonlinear science?. Nonlinearity, 2008, 21, T91-T100.	0.6	55
28	Effective breather trapping mechanism for DNA transcription. Physical Review E, 1996, 53, 1011-1020.	0.8	54
29	Nonlinear localization in thermalized lattices: application to DNA. Physica A: Statistical Mechanics and Its Applications, 2000, 288, 199-217.	1.2	48
30	Discreteness effects on the formation and propagation of breathers in nonlinear Klein-Gordon equations. Physical Review E, 1993, 48, 4768-4778.	0.8	47
31	The dynamics of water in nanoporous silica studied by dielectric spectroscopy. European Physical Journal E, 2005, 17, 21-27.	0.7	43
32	Kinkâ€™s internal modes in the Frenkel-Kontorova model. Physical Review E, 1997, 56, 6050-6064.	0.8	40
33	The inherent structure landscape of a protein. Proceedings of the National Academy of Sciences of the United States of America, 2006, 103, 5279-5284.	3.3	40
34	Thermal Denaturation of DNA Studied with Neutron Scattering. Physical Review Letters, 2011, 106, 048101.	2.9	38
35	Thermodynamic Instabilities in One Dimension: Correlations, Scaling and Solitons. Journal of Statistical Physics, 2002, 107, 869-891.	0.5	37
36	Temperature Dependence of the DNA Double Helix at the Nanoscale: Structure, Elasticity, and Fluctuations. Biophysical Journal, 2013, 105, 1904-1914.	0.2	34

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37	Local modes and localization in a multicomponent nonlinear lattice. Physical Review E, 1997, 55, 4740-4756.	0.8	31
38	Kink dynamics in the periodically modulatedÏ†4model. Physical Review E, 1993, 48, 548-554.	0.8	29
39	Dependence of kinetic friction on velocity: Master equation approach. Physical Review E, 2011, 83, 046129.	0.8	29
40	Nonlinear rotating modes: Green's-function solution. Physical Review E, 1997, 55, 1922-1928.	0.8	28
41	Nonlinear Structures and Thermodynamic Instabilities in a One-Dimensional Lattice System. Physical Review Letters, 2004, 93, 258101.	2.9	28
42	Base Pair Openings and Temperature Dependence of DNA Flexibility. Physical Review Letters, 2012, 108, 078104.	2.9	28
43	Mobility and diffusivity in a generalized Frenkel-Kontorova model. Physical Review B, 1996, 54, 321-331.	1.1	24
44	Melting the double helix. Nature Physics, 2006, 2, 13-14.	6.5	24
45	Thermodynamics of a nonlinear model for DNA denaturation. Physica D: Nonlinear Phenomena, 1993, 66, 35-42.	1.3	23
46	Frenkel-Kontorova model with a nonconvex transverse degree of freedom: A model for reconstructive surface growth. Physical Review B, 1995, 51, 17158-17167.	1.1	22
47	Glass transition in protein hydration water. Physical Review E, 2001, 64, 011109.	0.8	21
48	Solitonic-exchange mechanism of surface diffusion. Physical Review B, 1996, 54, 313-320.	1.1	20
49	On modulational instability of nonlinear waves in 1D ferromagnetic spin chains. Journal of Physics Condensed Matter, 2005, 17, 3083-3112.	0.7	20
50	Vector nonlinear Klein-Gordon lattices: General derivation of small amplitude envelope soliton solutions. Physics Letters, Section A: General, Atomic and Solid State Physics, 1999, 253, 161-167.	0.9	19
51	Guanine radical chemistry reveals the effect of thermal fluctuations in gene promoter regions. Nucleic Acids Research, 2011, 39, 5276-5283.	6.5	18
52	Friction in a thin commensurate contact. Physical Review B, 1997, 56, 4987-4995.	1.1	17
53	Can We Model DNA at the Mesoscale?. Journal of Biological Physics, 2005, 31, 273-301.	0.7	17
54	Structural correlations and melting of B-DNA fibers. Physical Review E, 2011, 83, 061923.	0.8	17

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55	Collective Effects at Frictional Interfaces. Tribology Letters, 2012, 48, 11-25.	1.2	16
56	One-dimensional â€œturbulenceâ€•in a discrete lattice. Chaos, 2003, 13, 624-636.	1.0	13
57	Kinks motion and underdamped dc-driven dynamics of atomic monolayers. Physica D: Nonlinear Phenomena, 1998, 123, 357-367.	1.3	12
58	The dynamics of the DNA denaturation transition. Europhysics Letters, 2012, 98, 48004.	0.7	12
59	From Thermal Rectifiers to Thermoelectric Devices. Lecture Notes in Physics, 2016, , 365-407.	0.3	12
60	Simple theories of complex lattices. Physica D: Nonlinear Phenomena, 1998, 123, 403-424.	1.3	11
61	Role of aging in a minimal model of earthquakes. Physical Review E, 2013, 87, .	0.8	11
62	Model for DNA hairpin denaturation. European Physical Journal E, 2005, 16, 235-246.	0.7	10
63	van ErpetÂal.Reply:. Physical Review Letters, 2006, 96, .	2.9	9
64	Modeling protein thermodynamics and fluctuations at the mesoscale. Physical Review E, 2006, 74, 041916.	0.8	9
65	Modeling DNA beacons at the mesoscopic scale. European Physical Journal E, 2007, 23, 397-411.	0.7	9
66	Glassy Behavior of Denatured DNA Films Studied by Differential Scanning Calorimetry. Journal of Physical Chemistry B, 2012, 116, 4394-4402.	1.2	9
67	Onset of Sliding of Elastomer Multicontacts: Failure of a Model of Independent Asperities to Match Experiments. Frontiers in Mechanical Engineering, 2020, 6, .	0.8	9
68	van ErpetÂal.Reply:. Physical Review Letters, 2006, 97, .	2.9	8
69	Memory effects in glasses: Insights into the thermodynamics of out-of-equilibrium systems revealed by a simple model of the Kovacs effect. Physical Review E, 2020, 102, 052122.	0.8	8
70	Purification of A-Form DNA Fiber Samples by the Removal of B-Form DNA Residues. Journal of Physical Chemistry B, 2013, 117, 1849-1856.	1.2	7
71	Kinky DNA in solution: Small-angle-scattering study of a nucleosome positioning sequence. Physical Review E, 2018, 98, .	0.8	7
72	How is information transmitted in a nerve?. Journal of Biological Physics, 2020, 46, 327-341.	0.7	7

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73	A model on the origin of RNA. Physical Biology, 2005, 2, 200-206.	0.8	6
74	Impurity effects on soliton dynamics in planar ferromagnets. Physics Letters, Section A: General, Atomic and Solid State Physics, 1993, 172, 236-242.	0.9	5
75	Soliton-like behaviour in a modified sine-Gordon model. Physica D: Nonlinear Phenomena, 1993, 64, 355-364.	1.3	5
76	DNA melting: A phase transition in one dimension. Mathematics and Computers in Simulation, 1996, 40, 305-318.	2.4	5
77	Can we model DNA at the mesoscale?. Physics of Life Reviews, 2014, 11, 173-175.	1.5	5
78	Seismic quiescence in a frictional earthquake model. Geophysical Journal International, 2018, 213, 676-683.	1.0	5
79	The statistical distributions of one-dimensional â€œturbulenceâ€• Physica D: Nonlinear Phenomena, 2004, 193, 265-277.	1.3	4
80	Intrinsic localized modes in nonlinear models inspired by DNA. Nonlinear Theory and Its Applications IEICE, 2012, 3, 27-51.	0.4	4
81	Energy Localization in Nonlinear Lattices. NATO ASI Series Series B: Physics, 1994, , 29-38.	0.2	4
82	Melting of Highly Oriented Fiber DNA Subjected to Osmotic Pressure. Journal of Physical Chemistry B, 2015, 119, 4441-4449.	1.2	3
83	Melting Transition of Oriented DNA Fibers Submerged in Poly(ethylene glycol) Solutions Studied by Neutron Scattering and Calorimetry. Journal of Physical Chemistry B, 2018, 122, 2504-2515.	1.2	3
84	Discreteness effects on soliton dynamics: A simple experiment. American Journal of Physics, 2000, 68, 552-555.	0.3	2
85	Some Applications of a Driven Nonlinear Lattice: Statistical Properties of Turbulence and Control of Thermal Flow. International Journal of Modern Physics B, 2003, 17, 4086-4099.	1.0	2
86	A first approach to reaction kinetics in large molecules. Physica D: Nonlinear Phenomena, 1998, 113, 297-306.	1.3	1
87	Critical examination of the inherent-structure-landscape analysis of two-state folding proteins. Physical Review E, 2009, 80, 061907.	0.8	1
88	On four-point correlation functions in simple polymer models. Journal of Statistical Mechanics: Theory and Experiment, 2009, 2009, P04011.	0.9	1
89	Small-angle scattering as a tool to study the thermal denaturation of DNA. Europhysics Letters, 2014, 108, 18002.	0.7	1
90	Ionic mobility in DNA films studied by dielectric spectroscopy. European Physical Journal E, 2014, 37, 39.	0.7	1

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91	Characterization of the low-temperature properties of a simplified protein model. Physical Review E, 2014, 89, 012705.	0.8	1
92	Comment on â€œDynamically induced heat rectification in quantum systemsâ€• Physical Review E, 2020, 101, 016101.	0.8	1
93	Nonlinear lattice models for biopolymers: Dynamical coupling to a ionic cloud and application to actin filaments. Discrete and Continuous Dynamical Systems - Series S, 2011, 4, 1147-1166.	0.6	0
94	Calorimetric study of melted DNA glass. , 2013, , .		0
95	Melting transition of oriented Liâ€ÐNA fibers submerged in ethanol solutions. Biopolymers, 2021, 112, e23422.	1.2	0
96	Understanding temperature-modulated calorimetry through studies of a model system. Physical Review E, 2022, 105, 034144.	0.8	0