Nikos Theodorakopoulos

List of publications

A. Articles in refereed journals

1. N. Theodorakopoulos
   Effects of dimensionality upon transport coefficients near the liquid-gas critical point
   Nuovo Cimento Letters **2**, 528 (1969)
2. N. Theodorakopoulos
   Nearest neighbor Ising model with added local 4-spin interaction
   Zeitschrift für Physik **254**, 399 (1972)
3. N. Theodorakopoulos
   Phase transition of the compressible Ising lattice
   Solid State Communications **12**, 955 (1973)
4. W. Hasenfratz, R. Klein and N. Theodorakopoulos
   Light scattering from moving cluster walls in a model of displacive phase transitions
   Solid State Communications **18**, 893 (1976)
5. N. Theodorakopoulos and J. Jäckle
   Low frequency Raman scattering by defects in glasses
   Physical Review B **14**, 2637 (1976)
6. N. Theodorakopoulos
   Dynamics of non-linear systems: the kink-phonon interaction
   Zeitschrift für Physik B **33**, 385 (1979)
7. N. Theodorakopoulos
   On the statistical mechanics of the discrete ϕ^4 chain
   Journal of Physics A **12**, **L**211 (1979)
8. N. Theodorakopoulos, W. Wünderlich and R. Klein
   Lattice phonons in the presence of non-linear excitations
   Solid State Communications **33**, 213 (1979)
9. R. Klein, W. Hasenfratz, N. Theodorakopoulos and W. Wünderlich
   The kink-phonon and the kink-kink interaction in the ϕ^4 model
   Ferroelectrics **26**, 721-724 (1980)
10. N. Theodorakopoulos and R. Klein
    Phonon fluctuations and soliton diffusion in nonlinear Hamiltonian systems
    Physica Status Solidi (a) **61**, 107 (1980)

11. N. Theodorakopoulos
Thermodynamics of a Sine-Gordon breather gas
Zeitschrift für Physik B **46**, 367 (1982)

12. N. Theodorakopoulos and F. G. Mertens
Dynamics of the Toda lattice: a soliton-phonon phase shift analysis
Physical Review B **28**, 3512 (1983)

13. N. Theodorakopoulos
Finite temperature excitations of the classical Toda chain
Physical Review Letters **53**, 871 (1984)

14. N. Theodorakopoulos
Ideal-gas approach to the statistical mechanics of integrable systems
Physical Review B **30**, 4071 (1984) - RC

15. P. Perez and N. Theodorakopoulos
Solitary excitations in the α-helix: viscous and thermal effects
Physics Letters A **117**, 405 (1986)

16. P. Perez and N. Theodorakopoulos
Competing mechanisms for the transport of energy in the α-helix
Physics Letters A **124**, 267 (1987)

17. N. Theodorakopoulos and E. W. Weller
Fluctuation properties of thermal solitons
Physical Review B **37**, 6200 (1988)

18. N. Theodorakopoulos and E. W. Weller
Low-temperature dynamics of Sine-Gordon solitons
Physical Review B **38**, 2749 (1988)

19. N. Theodorakopoulos
Semiclassical excitation spectrum of an integrable discrete spin chain
Physics Letters A **130**, 249 (1988)

20. N. Theodorakopoulos and N. C. Bacalis
Semiclassical solitons and the S=1/2 Heisenberg model
Physical Review Letters **67**, 3018 (1991)

21. N. Theodorakopoulos and N. C. Bacalis
Thermal solitons in the Toda chain
Physical Review B **46**, 10706 (1992)

22. N. Theodorakopoulos
Non-topological thermal solitons in isotropic ferromagnetic lattices
Physical Review B **52**, 9507 (1995); arXiv:cond-mat/9506061

23. V. Constantoudis and N. Theodorakopoulos
Quantum signatures of chaos in integrable systems
Journal of Physics A **28**, 5701 (1995)

24. P.B. Farmer, O. Sepai, R. Lawrence, H. Autrup, P. Sabro Nielsen, A.B. Vestergard, R. Waters, C. Leuratti, N.J. Jones, J. Stone, R.A. Baan, J.H. van Delft, M.J. Steenwinkel, S.A. Kyrtopoulos, V.I. Souliotis, N. Theodorakopoulos, N.C. Bacalis, A.T. Natarajan, A.D. Tates, A. Haugen, Å. Andreassen, S. Øvrebø, D.E. Shuker, K.S. Amaning, P. Castelain
Biomonitoring human exposure to environmental carcinogenic chemicals
Mutagenesis **11**, 363 (1996)

25. N. Theodorakopoulos, N.C. Bacalis and Z. Xiong
Thermodynamics of the Ishimori-Haldane-Faddeev ferromagnetic chain: the field-dependent case
Physical Review B **54**, 4033 (1996)

26. N. Theodorakopoulos and N.C. Bacalis
Low temperature asymptotics of isotropic ferromagnetic chains at non-zero fields
Physical Review B **55**, 52 (1997)

27. N.C. Bacalis, N. Theodorakopoulos and D.A. Papaconstantopoulos
Wavevector-dependent Stoner approach to band ferromagnetism in Ni
Physical Review B **55**, 11391 (1997)

28. V. Constantoudis and N. Theodorakopoulos
Nonlinear dynamics of classical Heisenberg chains
Physical Review E **55**, 7612 (1997)

29. V. Constantoudis and N. Theodorakopoulos
Lyapunov exponent, stretching numbers and islands of stability of the kicked top
Physical Review E **56**, 5189 (1997)

30. N. Theodorakopoulos and M. Peyrard
Solitons and non-dissipative diffusion
Physical Review Letters **83**, 2293 (1999)

31. N. Theodorakopoulos, T. Dauxois and M. Peyrard
Order of the phase transition in models of DNA thermal denaturation
Physical Review Letters **85**, 6 (2000); arXiv:cond-mat/0004487

32. T. Dauxois, N. Theodorakopoulos and M. Peyrard
Thermodynamic instabilities in one dimension: correlations, scaling and solitons
Journal of Statistical Physics **107**, 869 (2002); arXiv:cond-mat/0105341

33. N. Theodorakopoulos
Thermodynamic instabilities in one dimensional particle lattices: a finite-size scaling approach
Physical Review E **68**, 026109 (2003); arXiv:cond-mat/0306315

34. M. Barbi, S. Lepri, M. Peyrard and N. Theodorakopoulos
Thermal denaturation of a helicoidal DNA model
Physical Review E **68**, 061909 (2003); arXiv:cond-mat/0309454

35. N. Theodorakopoulos, M. Peyrard and R.S. MacKay
Nonlinear structures and thermodynamic instabilities in a one-dimensional lattice system
Physical Review Letters **93**, 258101 (2004); arXiv:cond-mat/0411188

36. N. Theodorakopoulos
Phase transitions in one dimension: are they *all* driven by domain walls?
Physica D **216**, 185 (2006); arXiv:cond-mat/0510437.

37. J. Errami, M. Peyrard and N. Theodorakopoulos
Modeling DNA beacons at the mesoscopic scale
European Physical Journal E **23**, 397 (2007); arXiv:0706.2458

38. N. Theodorakopoulos
DNA denaturation bubbles at criticality
Physical Review E **77**, 031919 (2008); arXiv:0802.2194

39. J-G. Hagmann, K.K. Kozlowski, N. Theodorakopoulos and M. Peyrard
On 4-point correlation functions in simple polymer models
Journal of Statistical Mechanics: Theory and Experiment P04011 (2009); arXiv:0903.4816

40. N. Theodorakopoulos
Melting of genomic DNA: predictive modeling by nonlinear lattice dynamics
Physical Review E **82**, 021905 (2010); arXiv:1007.2728

41. A. Wildes, N. Theodorakopoulos, J. Valle-Orero, S. Cuesta-López, J-L Garden and M. Peyrard
The thermal denaturation of DNA studied with neutron scattering
Physical Review Letters **106**, 048101 (2011); arXiv:1101.1797

42. N. Theodorakopoulos
Bubbles, clusters and denaturation in genomic DNA: modeling, parametrization and efficient computation
Journal of Nonlinear Mathematical Physics **18**, Suppl. 2, pp. 429-447 (2011); arXiv:1102.0259

43. A. Wildes, N. Theodorakopoulos, J. Valle-Orero, S. Cuesta-López, J-L Garden and M. Peyrard
Structural correlations and melting of B-DNA
Physical Review E **83**, 061923 (2011); arXiv:1106.2632

44. N. Theodorakopoulos and M. Peyrard
Base pair openings and temperature dependence of DNA flexibility
Physical Review Letters **108**, 078104 (2012); arXiv:1201.6561

45. S. Meyer, N. Theodorakopoulos, M. Peyrard, R. Lavery and R. Everaers
Temperature dependence of the DNA Double Helix at the Nanoscale: Structure, Elasticity, and Fluctuations
Biophysical Journal **105**, 1904 (2013).

46. J. Valle-Orero, A. Wildes, N. Theodorakopoulos, S. Cuesta-López, J-L Garden, S. Danilkin and M. Peyrard
Thermal denaturation of A-DNA
New Journal of Physics **16**, 113017 (2014)

47. K Wood, R. Knott, O. Tonchev, D. Angelov, N. Theodorakopoulos and M. Peyrard
Small angle scattering as a tool to study the thermal denaturation of DNA
Europhys. Lett. **108**, 18002 (2014).

B. Book chapters and refereed conference proceedings

1. N. Theodorakopoulos, S. Hanna and R. Klein
Behavior of a ϕ^4 kink in the presence of an inhomogeneous perturbation
in *Solitons and Condensed Matter Physics,* A. R. Bishop and T. Schneider (Eds.), pp. 158-161, Springer (1978)

2. N. Theodorakopoulos
Dynamics of the Sine-Gordon chain: the kink-phonon interaction, soliton diffusion and dynamical correlations
in *Ordering in strongly fluctuating condensed matter systems*, T. Riste (Ed.), pp. 145-149, Plenum (1980)

3. N. Theodorakopoulos and R. Klein
Inherent effects of discretization in an interacting kink-phonon system
in *Physics in one dimension*, J. Bernasconi and T. Schneider (Eds.), pp. 100-103, Springer (1981)

4. N. Theodorakopoulos
Counting solitons and phonons in the Toda lattice
in *Statics and dynamics of nonlinear systems*, G. Benedek, H. Bilz and R. Zeyher (Eds.), pp. 271-277, Springer (1983)

5. N. Theodorakopoulos
Classical statistical mechanics of integrable systems
in *Dynamical problems in soliton systems*, S. Takeno (Ed.), pp. 115-121, Springer (1985)

6. N. Theodorakopoulos
Solitons: Dynamics, Statistics and the Bethe Ansatz

in *Proceedings of the 2nd International Conference on Phonon Physics*, J. Kollar *et al* (Eds.), pp. 468-477, World Scientific (1985)

7. N. Theodorakopoulos and N. C. Bacalis
   Thermally excited lattice solitons
   in *Proton transfer in hydrogen-bonded systems* (Ed. T. Bountis), pp. 131-137, Plenum (1991)
8. N. Theodorakopoulos
   The statistical properties of lattice solitons
   in *Nonlinear coherent structures in Physics and Biology* (Eds. K. Spatschek and F.G. Mertens), pp. 73-83, Plenum (1994)
9. N. Theodorakopoulos
   Phase transitions in homogeneous biopolymers: basic concepts and methods
   in *Localization and energy transfer in nonlinear systems*, L.Vazquez, R.S. MacKay and M.P. Zorzano (Eds.), pp. 130-152, World Scientific (2003); arXiv:cond-mat/0210188
10. N. Theodorakopoulos, M. Peyrard and T. Dauxois
    Critical dynamics of DNA denaturation
    in *Localization and energy transfer in nonlinear systems*, L.Vazquez, R.S. MacKay and M.P. Zorzano (Eds.), pp. 239-247, World Scientific (2003); arXiv:cond-mat/0211287
11. N. Theodorakopoulos
    Statistical physics of localized vibrations
    in "Energy Localisation and Transfer", T. Dauxois, A. Litvak-Hinenzon, R. MacKay & A. Spanoudaki (Eds.), *Advanced Series on Nonlinear Dynamics - Vol.22*, pp. 341-353, World Scientific (2004).
12. N. Theodorakopoulos
    Minimal modeling of DNA thermal and mechanical instabilities
    Proceedings of a workshop on *Mathematical Methods and Models of Continuum Biomechanics*
    Oberwolfach Reports (European Mathematical Society) **2**, pp. 523-526 (2005).

C. Doctoral Dissertation

1. N. Theodorakopoulos
   Molecular relaxation and critical dynamics
   Brown University 1971; thesis adviser: Leo Kadanoff; Digital Dissertations publication AAT 7302342

D. Lecture Notes

1. N. Theodorakopoulos
   Selected topics in theoretical biophysics
   University of Konstanz 2001, pp. 1-56
2. N. Theodorakopoulos
   Nonlinear Physics: Solitons, Chaos, Discrete Breathers
   University of Konstanz 2006, pp. 1-174
3. N. Theodorakopoulos
   Die statistische Physik des DNA-Schmelzens
   slightly adapted version of an inaugural lecture at the University of Konstanz, 2003 (in German) pp. 1-14

E. Miscellaneous

1. N. Theodorakopoulos
   R&D spending, extroversion and optimization of academic & research institutions
   Symposium on research and technology, Association of Greek Researchers, Athens, 2005 (in Greek) pp. 1-3
2. N. Theodorakopoulos and M. Peyrard
   Optimization of parameters in the Peyrard-Bishop-Dauxois model of DNA melting: a preliminary report
   HPC-Europa2, Pan-European Research Infrastructure on High Performance Computing, 2012 report.