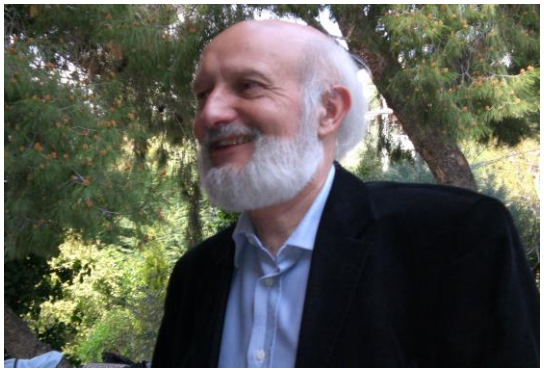
Nikos Theodorakopoulos



Director of Research (emeritus)
Theoretical and Physical Chemistry Institute

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Academic degrees

- Habilitation (1979, theoretical physics, University of Konstanz, Germany)
- Ph.D. (1971, theoretical physics, Brown University, USA)
- M.S. (1968, physics, University of Illinois at Urbana, USA)
- B.S. (1967, physics, Harvey Mudd College, Claremont, California, USA)

Research / Teaching appointments

- Ausserplanmaessiger Professor, Department of Physics, University of Konstanz, Germany (2003-)
- Director of research, TPCI, NHRF, Athens (2002-2012)
- Senior research scientist, TPCI, NHRF, Athens (1989-2002)
- Member of the research staff, Max-Planck Institute for Solid State Research, Stuttgart (1982-87)
- Assistant professor, University of Konstanz (1973-81)
- Research associate, Institute for Solid State Physics, Julich (1971-72)
- Graduate assistant, Brown University (1969-71).

Research interests

- Theoretical condensed matter physics (critical phenomena, low-temperature properties of amorphous solids),
- soliton physics
- computational physics
- biological physics (statistical mechanics of biopolymers).

International collaborative projects

- "Localisation by nonlinearity and special discreteness, and energy transfer in crystals, biomolecules and Josephson arrays" (LOCNET), EU network, 2000-2004

- "Modelling self-assembly of DNA double helix: hairpins, DNA chips and DNA micromanipulators". "Cotutelle" (jointly supervised Ph.D. project), University of Konstanz & ENS-Lyon, funded by Region Rhones-Alpes, 2004-2006
- "Critical scattering from denatured 'bubbles' in DNA", ENS de Lyon, Institut Laue Langevin (Grenoble), University of Konstanz, 2007-
- "The spatial variation of the persistence length along selected DNA sequences", ENS de Lyon, Institut Laue Langevin, ANSTO, University of Konstanz, 2013-

Teaching activities

- Courses at the advanced undergraduate and graduate level (theoretical solid state physics, mathematical physics, renormalization group and critical phenomena, soliton physics, nonlinear phenomena and chaos, applied numerical analysis, theoretical biophysics, statistical physics in biology).
- Supervision of six Ph.D. students and two postdoctoral research fellows.

Administrative office

Physics faculty council, Universitat Konstanz (1975-77); Senate, Universität Konstanz (1977-79); scientific advisory council, TPCI / NHRF (1994-8, 2004-2009); ministerial panel for Greek legal framework on research (1996-7); electoral committee for researchers' appointments, TPCI / NHRF (2007-2011); coordinator, condensed matter theory group, TPCI / NHRF (2004-2012)

Professional affiliations & activities

- Member, American Physical Society (Biological Physics, Statistical & Nonlinear Physics Groups, Forum on International Physics)
- Refereeing for most major physics journals

Honors, awards, visiting professorships

- Visiting professorship at the École Normale Supérieure de Lyon, France (1998, 2011)
- Special visiting professorship at the University of Tokyo (Japan Society for the Promotion of Science award, 1988)
- Visiting professorship at the University of Bayreuth, Germany (1988)
- Visiting professorship at the University of Basel, Switzerland (1987)
- U.S. Steel Graduate Fellowship award (1969)
- University of Illinois Graduate Fellowships (1967-68, 1968-69)
- Distinction & departmental honors in Physics, Harvey Mudd College (1967)

- Undergraduate nomination to the Mathematical Association of America (1966)
- Fulbright grant for undergraduate study in the U.S. (1965-67)

Publications

47 articles in refereed journals, 12 articles in international conference proceedings and/or books

Full list of publications

Selected recent publications

- Base pair openings and temperature dependence of DNA flexibility, N. Theodorakopoulos and M. Peyrard, Phys. Rev. Lett. 108, 078104 (2012); arXiv:1201.6561
- The thermal denaturation of DNA studied with neutron scattering, A. Wildes, N. Theodorakopoulos, J. Valle-Orero, S. Cuesta-López, J-L Garden and M. Peyrard, Phys. Rev. Lett. 106, 048101 (2011); arXiv:1101.1797
- Melting of genomic DNA: predictive modeling by nonlinear lattice dynamics, N. Theodorakopoulos, Phys. Rev. E 82, 021905 (2010); arXiv:1007.2728
- DNA denaturation bubbles at criticality, N. Theodorakopoulos, Phys. Rev. E 77, 031919 (2008); arXiv:0802.2194
- Phase transitions in one dimension: are they all driven by domain walls? N. Theodorakopoulos, Physica D 216, 185 (2006); arXiv:cond-mat/0510437
- Nonlinear structures and thermodynamic instabilities in a one-dimensional lattice system, N. Theodorakopoulos, M. Peyrard and R.S. MacKay, Phys. Rev. Lett. 93, 258101 (2004), cond-mat/0411188
- Thermodynamic instabilities in one dimensional particle lattices: a finite-size scaling approach, N. Theodorakopoulos, Phys. Rev. E 68, 026109 (2003); cond-mat/0306315
- Order of the phase transition in models of DNA thermal denaturation, N. Theodorakopoulos, T. Dauxois and M. Peyrard, Phys. Rev. Lett. 85, 6 (2000), cond-mat/0004487
- Solitons and non-dissipative diffusion, N. Theodorakopoulos and M. Peyrard, Phys. Rev. Lett. 83, 2293 (1999)
- Die statistische Physik des DNA-Schmelzens (slightly adapted version of an inaugural lecture at the University of Konstanz, 2003, in German)
- R&D spending, extroversion and optimization of academic & research institutions (Extended abstract of a lecture, Symposium on research and technology, Association of Greek Researchers, Athens, 2005, in Greek)