

Nicholas D. Alikakos

Professor of Mathematics

Department of Mathematics
University of Athens
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Personal information

I was born in 1952 in Athens, Greece. I finished Athens College (Kollegion Athinon) in 1971, the University of Massachusetts at Amherst in 1974 (B.Sc.) and Brown University in 1978 (Ph.D.). I was elected Professor at the University of Crete in 1988 and Professor at the University of Athens in 1993. I served on the faculties of Purdue University, University of Tennessee at Knoxville, and the University of North Texas. I was a Visiting Scholar at Stanford University for the periods Feb 1 – June 1 in 2009, and also in 2012, and ‘Professeur Invité’ at the Université Pierre et Marie Curie for the month of July in 2010.

Doctoral students

Vangelis Stefanopoulos, 1993 (Assistant Professor, University of the Aegean)

Michał Kowalczyk, 1995 (Professor, University of Chile)

Georgia Karali, 2002 (Assistant Professor, University of Crete)

Christos Sourdis, 2006 (Post-Doc, University of Chile 2007–09; Post-Doc, Archimedes Center, University of Crete, 2011–present)

Nikolaos Katzourakis, 2011 (Post-Doc, Basque Center for Applied Mathematics, Bilbao)

Panayiotis Smyrnelis, 2012 (jointly with Michel Marias)

Apostolos Damialis, in progress

Panagiotis Antonopoulos, in progress

Publications since 2007

- [1] Plateau angle conditions for the vector-valued Allen–Cahn equation. arXiv:1210.0231 (*with Panayiotis Antonopoulos and Apostolos Damialis*)
- [2] A replacement lemma for obtaining pointwise estimates in phase transition models. arXiv:1010.5455 (*with Giorgio Fusco*)
- [3] A new proof for the existence of an equivariant entire solution connecting the minima of the potential for the system $\Delta u - W_u(u) = 0$. To appear in *Comm. Partial Diff. Equations*.
- [4] Existence of lattice solutions to semilinear elliptic systems with periodic potential. *Electr. J. Diff. Equations* **2012** No. 15 (2012), pp. 1–15 (*with Panayiotis Smyrnelis*)
- [5] The stress-energy tensor and Pohozaev’s identity for systems. *Acta Math. Scientia* **32** No. 1 (2012), pp. 433–439 (*with Apostolos Faliagas*)
- [6] Entire solutions to equivariant elliptic systems with variational structure. *Arch. Rat. Mech. Anal.* **202** No. 2 (2011), pp. 567–597 (*with Giorgio Fusco*)
- [7] On an elliptic system with symmetric potential possessing two global minima. To appear in *Bull. Greek Math. Soc.* (*with Giorgio Fusco*)
- [8] Some basic facts on the system $\Delta u - W_u(u) = 0$. *Proc. Amer. Math. Soc.* **139** No. 1 (2011), pp. 153–162
- [9] Heteroclinic travelling waves of gradient diffusion systems. *Trans. Amer. Math. Soc.* **363** No. 3 (2011), pp. 1362–1397 (*with Nikolaos I. Katzourakis*)

- [10] Entire solutions to nonconvex variational elliptic systems in the presence of a finite symmetry group. In *Singularities in nonlinear evolution phenomena and applications* M. Novaga and G. Orlandi eds. Publications of the Scuola Normale Superiore, CRM Series, Birkhäuser, 2009 (*with Giorgio Fusco*)
- [11] On the connection problem for potentials with several global minima. *Ind. Univ. Math. J.* **57** No. 4 (2008), pp. 1871–1906 (*with Giorgio Fusco*)
- [12] Explicit stationary solution in multiple well dynamics and non-uniqueness of interfacial energy densities. *Eur. J. Appl. Math.* **17** No. 5 (2006), pp. 525–556 (*with Santiago I. Betelú and Xinfu Chen*)
- [13] Singular perturbation problems arising from the anisotropy of crystalline grain boundaries. *J. Dyn. Diff. Equations* **19** No. 4 (2007), pp. 935–949 (*with Paul C. Fife, Giorgio Fusco, and Christos Sourdis*)

Institutions visited in the last five years

Jinhua, China, June 2007 (1 week)
 Centro Ennio De Giorgi, Pisa, Italy, May 2008 (1 week)
 Stanford University, February 1 – June 1, 2009 (sabbatical)
 Michigan State University, April 2009 (1 week)
 Columbia University, April 2009 (3 days)
 Max-Planck Institute Leipzig, 2009 (3 days)
 University of Paris VI, July 2010 (1 month)
 University of Roma Tor Vergata, Italy, Fall 2010 (3 days)
 L’Aquila, Italy, June 2011 (3 days)
 University of Bath, UK, December 2011 (3 days)
 Stanford University, February 1 – June 1, 2012 (sabbatical)
 UMBC , March 2012 (2 days)
 Michigan State University, March 2012 (1 week)
 Centro De Giorgi, Pisa, September 2012

Seminar

I have a regular seminar on Applied Analysis and PDE’s, meeting on Fridays, at 15:00, since 2006. The list of speakers and dates since 2007 can be found on my webpage.

Grants

Two grants, 45.000 euros each, (for my graduate students Damialis and Katzourakis) in the ‘Heracleitus II’ programme, supported by the Ministry of Education and the EU in the framework of EPEAEK II, 2010–2013. I serve as the coordinator.

‘Aristeia’ programme, 175.000 euros, 36 months (starting date August 1, 2012)

Associate Member of the European Network FIRST (funds to organize a workshop in 2013, approximately 7000 euros)

Several ‘Kapodistrias’ research grants at the University of Athens.

Teaching

I have been teaching one undergraduate and one graduate course per semester (on the average). Frequently the undergraduate course is in the Physics or the Computer Science department (last Fall). Equally often, I teach ODE’s or PDE’s. The graduate course frequently is either one of the core Applied Math courses, or advanced Topics in PDE’s and the Calculus of Variations. I am planning to continue if possible in this direction.

With G. Kalogeropoulos we have written a textbook on ODE’s, at the undergraduate level (first edition 2003), that is used for teaching in our University and an undergraduate textbook on PDE’s, with G. Akrivis (University of Ioannina).

Editorial boards

Abstract and Applied Analysis

Bulletin of the Greek Mathematical Society

Research plan

PDE's in geometric evolution

(Updated October 2012)