

## CURRICULUM VITAE

**Name** **ACHILLES K. TERTIKAS**

**Personal data** Date of birth: August 10, 1960,  
Place of birth: Karditsa, Greece.  
Citizenship : Greek.  
Military service: September 1987 - June 1989.  
Marital status : Married, with three children.

**Office Address** Department of Mathematics  
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**Education** BA in Math., Univ. of Athens, Greece (1978-1982)  
Ph.D. in Math., Heriot-Watt Univ., U.K. (1984-1987)  
Thesis advisor: K. J. Brown

**Research Interests** Partial Differential Equations,  
Reaction Diffusion Problems,  
Population Genetics Problems,  
Hardy-Sobolev-Rellich Inequalities,  
Phase Transition problems (Coarsening Theory).

**Positions** Visiting Lecturer (1989-1990), Univ. of Aegean, Greece  
Visiting Assistant Professor (1990-1993), Univ. of Crete, Greece  
Assistant Professor (1993-1998 ), Univ. of Crete, Greece  
Visiting position (September 1993-January 1994), Georgia Tech., USA  
Visiting position (May 1994-July 1994), Univ. of Cologne, Germany  
Visiting position (September 1997-January 1998), Oxford Univ., UK  
Associate Professor (1998-2006), Univ. of Crete, Greece  
Visiting position (January-February 2000), Mittag-Leffler Inst., Sweden  
Visiting position (September-December 2004), Rutgers University, USA  
Visiting position (January-May 2005), University of Cyprus, Cyprus.  
Professor (2006-), Univ. of Crete, Greece  
Visiting position (September 1-15, 2008), Universite' de Cergy-Pontoise, France.  
Visiting position (January-May 2009), University of Cyprus, Cyprus.  
Visiting position (June 1-15 & September 7-22 2009), Universite' Paris Dauphine, France.

**Research grants** Royal Society (1989)  
British Council (1990)  
HCM Network grant CHRX-CT93-0409, Reaction Diffusion Equations,  
49,500 ECU (1994-1996)  
RTN Network grant HPRN-CT-2002-00274, Fronts-Singularities,

150,000 ECU (2002-2006)  
ELKE, University of Crete (2011-2012).

### Short visits

Heriot Watt University, U.K. (1989, 1997)  
University of Tennessee, USA (1993)  
Mississippi State University, USA (1994)  
University of Toulouse 1, France (1994)  
Universidad de La Laguna, Spain (1995)  
University of Rome I, Italy (1995, 1999, 2007, 2009, 2012)  
University of Triest, Italy (1995)  
Ecole Polytechnique de Lausanne, Switzerland (1996)  
University of Basel, Switzerland (1997, 1999)  
Universite de Haute Alsace, France (1999)  
Universite Pierre and Marie Curie (Paris VI), France (2003)  
Technion-Israel Institute of Technology, Israel (2004)  
University of Padova, Italy (2009).  
TIFR Centre for Applicable Mathematics, Bangalore, India (2012).

### International Conferences

*Conference on Ordinary and Partial Differential Equations*, University of Dundee, U. K., 30 June-4 July 1986.  
*Equadiff 87*, Democritus University of Thrace, Xanthi, August 24-28, 1987.  
*Nonlinear Diffusion Equations and their Equilibrium States*, University of Wales, U.K., August 20-29, 1989  
*Bifurcation and Chaos: Analysis, Algorithms, Applications*, University of Wurzburg, Germany, August 20-24, 1990.  
*First European Conference on Elliptic and Parabolic problems*, University of Metz France, June 17-21, 1991.  
*Equations of Reaction Diffusion*, University of Toulouse 1,3, France, April 8-9, 1994.  
*Workshop on Reaction-Diffusion systems*, University of La Laguna, Spain, January 9-13, 1995.  
*International Conference on Reaction Diffusion Systems*, University of Triest, Italy, October 2-7, 1995.  
*The Second World Congress of Nonlinear Analysts*, Athens, July 10-17, 1996.  
*Nonlinear Boundary Value problems*, Oberwolfach, December 15-21, 1996  
*EUCOR Conference on Qualitative properties of Partial Differential Equations*, Mulhouse November 11-13, 1999  
*New mathematical methods in continuum mechanics*, Anogia, Greece, July 22-28, 2000  
*Progress in Partial Differential Equations*, Edinburgh, July 9-13, 2001  
*International Conference on Differential, Difference Equations*, Patras, Greece, July 1-5, 2002  
*The Mathematics of Quantum Systems - Spectral Theory*, Warwick, U.K., April 4-9, 2005  
*Spectral Theory of PDE*, Stockholm, Sweden September 22, 2005  
*Loutraki Meeting on Spectrum, Differential Equations, and Mathematical Physics*, Loutraki, Greece, October 16-17, 2005  
*Liouville Theorems in Riemannian and Sub-Riemannian Settings*, Bologna, Italy, November 23-24, 2006  
*Liouville Theorems and detours*, Cortona, Italy, May 18-24, 2008  
*Analysis, PDES and Applications on the occasion of the 70th birthday of Vladimir Maz'ya*, Rome, Italy, June 30 - July 3, 2008

Day meeting on Log Sobolev inequalities, Paris Dauphine, France, June 8, 2009  
*International Conference on Modern Mathematical Methods in Science and Technology*, Poros, Greece, September 3-5, 2009  
*Conference in Harmonic Analysis*, Samos, Greece, September 22-25, 2009  
*Optimal Constants in the Theory of Sobolev Spaces and PDEs*, Oberwolfach, February 7th - February 13th, 2010  
*Panhellenic Conference in Mathematical Analysis*, Patras, Greece, May 18-19, 2012.  
*Advances in nonlinear partial differential equations*, Bangalore, India, June 18-20, 2012.

**Invited talks** Heriot Watt University, U.K. (1989, 1997)  
Georgia Institute of Technology, USA (1993)  
University of Tennessee, USA (1993)  
Mississippi State University, USA (1994)  
University of Cologne, Germany (1994)  
University of Rome I, Italy (1995, 1999, 2007, 2009)  
Ecole Polytechnique de Lausanne, Switzerland (1996)  
University of Basel, Switzerland (1997, 1999)  
Oxford University, UK (1997)  
Mittag-Leffler Institute, Sweden (2000)  
University of Athens, Greece (2001,2006,2009, 2010)  
Universite Pierre and Marie Curie, France (2003)  
Technion-Israel Institute of Technology, Israel (2004)  
Rutgers University, USA (2004)  
University of Cyprus, Cyprus (2005, 2010)  
Bristol University, UK (2006)  
Uppsala University, Sweden (2007)  
University of Bologna, Italy (2007)  
Universite' de Cergy-Pontoise, France (2008)  
University of Padova, Italy (2009)(5 day course)  
Free University of Berlin, Germany (2011)  
University of Napoli II, Italy (2011)  
TIFR Centre For Applicable Mathematics, India (2012)

## Teaching experience

### Undergraduate courses

Calculus I, Calculus II, Calculus III, Linear Algebra I, Linear Algebra II, Real Analysis, Ordinary Differential Equations I, Ordinary Differential Equations II, Introduction to Analysis I, Introduction to Analysis II, Partial Differential Equations, Mathematical modelling in Physics, Partial Differential Equations and Dynamical systems, Partial Differential Equations II, An introduction to Biomathematics, Biomathematics I, Biomathematics II, Calculus of Variations, Fourier Analysis.

### Graduate courses

Ordinary Differential Equations, Partial Differential Equations (Classical Theory), Partial Differential Equations (Weak Theory), Methods of Applied Mathematics, Pattern Theory and Dynamics.

## Other activities

### Conference organization

- Workshop on Reaction Diffusion Equations*, Anogia, Greece ( September 1994)
- Workshop on Reaction Diffusion Equations II*, Heraklion, Greece ( June 1996)
- Congress on Free Boundary Problems-97*, Heraklion, Greece  
(June 8-14, 1997) (local organizer)
- Greek Conference Applied Mathematics in honor of C. Dafermos*, Heraklion,  
Greece (June 2001)
- Workshop on Singular Phenomena in Nonlinear Partial Differential Equations*,  
Heraklion, Greece (September 23-25, 2002)
- Workshop on Liouville Theorems and detours*, Cortona, Italy, May 18-24, 2008

## Publications

1. Existence and Uniqueness of solutions for a Nonlinear Diffusion problem arising in Population Genetics, *Arch. Rational Mech. Anal.* 103 (1988), 289-317.
2. (with K. J. Brown) On an equation arising in Optical Bistability , *J. Math. Analysis Appl.* 139 (1989), 390-407.
3. Global bifurcation analysis and uniqueness for a semilinear problem, *Proc. Roy. Soc. Edinburgh* 111A (1989), 265-284..
4. Uniqueness of solutions for problems arising in population genetics, in *Differential Equations edited by C. M. Dafermos, G. Ladas and G. Papanicolaou, Lecture notes in Pure and Applied Mathematics* 118 (1989), 667-672.
5. (with K. J. Brown and S. S. Lin) Existence and Nonexistence of Steady-State solutions for a selection migration model in population genetics , *J. Math. Biol.* 27 (1989), 91-104.
6. (with K. J. Brown) On the bifurcation of radially symmetric Steady-State solutions arising in population genetics , *SIAM J. Math. Anal.* 22,2 (1991), 400-413.
7. Stability and instability of positive solutions of semi-positone problems, *Proc. Amer. Math. Soc.* 114,4 (1992), 1035-1040.
8. Global bifurcation of positive solutions in  $\mathbb{R}^n$ , *Nonlinear Diffusion Equations and their Equilibrium States 3*, edited by N. G. Lloyd, W. M. Ni, L. A. Peletier and J. Serrin, in *Progress in Nonlinear Differential Equations and their Applications* 7 (1992), Birkhauser Verlag, 513-536.
9. (with J. Toland) Graph intersection and uniqueness results for some nonlinear elliptic problems , *J. Diff. Eqs.* 95,1 (1992), 154-168.
10. (with K. J. Brown) The existence of principal eigenvalues for problems with indefinite weight function in  $\mathbb{R}^n$  , *Proc. Royal Soc. Edinburgh* 123A (1993), 561-569.
11. Uniqueness and Nonuniqueness of positive solutions for a semilinear elliptic equation in  $\mathbb{R}^n$ , *Diff. and Integral Equs* 8,4 (1995), 829-848.
12. (with T. Küpper) A global branch of positive solutions above the continuous spectrum for problems with indefinite nonlinearities , *Proc. Royal Soc. Edinburgh* 126A(1996), 465-482.

13. Critical Phenomena in Linear Elliptic Problems, *J. Funct. Anal.* 154,1 (1998), 42-66.
14. (with S. Filippas) On Similarity Solutions of a Heat Equation with a Nonhomogenous Nonlinearity, *J. Diff. Eqs.* 165 (2000), 468-492.
15. (with S. Filippas) Optimizing Improved Hardy Inequalities, *J. Funct. Anal.* 192, 1 (2002), 186–233; Corrigendum, *J. Funct. Anal.* 255(2008), 2095.
16. (with G. Barbatis and S. Filippas) Series expansion for  $L^p$  Hardy inequalities, *Indiana Univ. Math. J.* 52,1 (2003), 171-190.
17. (with G. Barbatis and S. Filippas) Refined geometric  $L^p$  Hardy inequalities, *Commun. Contemp. Math.* 5,6 (2003), 869-881.
18. (with G. Barbatis and S. Filippas) A unified approach to improved  $L^p$  Hardy inequalities with best constants *Tran. Amer. Math. Soc.* 356,6 (2004), 2169-2196.
19. (with G. Barbatis and S. Filippas) Critical heat kernel estimates for Schrödinger operators via Hardy-Sobolev inequalities, *J. Funct. Anal.* 208,1 (2004), 1-30.
20. (with S. Filippas and V. Maz'ya) Sharp Hardy-Sobolev inequalities, *Comptes Rendus Mathematique* 339 (2004), no. 7, 483-486.
21. (with G. Barbatis) On a class of Rellich Inequalities, *J. Comput. Applied Math.* 194(2006), 156–172.
22. (with S. Filippas and V. Maz'ya) On a question of Brezis and Marcus, *Calc. Var. Partial Differential Equations* 25,4 (2006), 491–501.
23. (with J. Chabrowski and S. Filippas) Positive solutions of a Neumann Problem with competing critical nonlinearities, *Topol. Methods Nonlinear Anal.* 28 (2006), 1–31.
24. (with K. Tintarev) On existence of minimizers for the Hardy-Sobolev-Maz'ya inequality, *Ann. Mat. Pura Appl.* 186(2007), 645–662.
25. (with N. Zographopoulos) a) Best constants in the Hardy-Rellich Inequalities and Related Improvements, *Adv. Math.* 209 (2), (2007), 407–459.  
b) Optimizing improved Hardy inequalities for the biharmonic operator. EQUADIFF 2003, 1137–1139, World Sci. Publ., Hackensack, NJ, 2005.
26. (with S. Filippas and V. Maz'ya) Critical Hardy–Sobolev Inequalities, *J. Math. Pures Appl.* 87(2007), 37–56.
27. (with S. Filippas and L. Moschini) Sharp two–sided heat kernel estimates for critical Schrödinger operators on bounded domains, *Comm. Math. Phys.* 273(2007), 237–281.
28. (with Y. Pinchover and K. Tintarev) A Liouville-type theorem for the  $p$ -Laplacian with potential term, *Ann. Inst. H. Poincaré' Anal. Non Lineaire* 25(2008), 357-368.
29. (with S. Filippas and L. Moschini) On a class of weighted anisotropic Sobolev inequalities, *J. Funct. Anal.* 255(2008), 90-119.
30. (with Adimurthi and S. Filippas) On the best constant of Hardy–Sobolev Inequalities, *Nonlinear Anal.* 70(2009), 2826–2833.
31. (with S. Filippas and J. Tidblom) On the structure of Hardy-Sobolev-Maz'ya inequalities, *J. Eur. Math. Soc.* 11(2009), 1165–1185.

32. (with S. Filippas and L. Moschini) Improving  $L^2$  estimates to Harnack inequalities, *Proc. London Math. Soc.* 99 (2009), 326–352.
33. (with S. Filippas and J. Tidblom) Optimal Hardy-Sobolev-Maz'ya inequalities with strong interior singularities, in *Around the Research of Vladimir Maz'ya* Edt by A. Laptev I. Function Spaces, 137–160, Springer (2010).
34. (with M. Del Pino, J. Dolbeault and S. Filippas), A Logarithmic Hardy inequality, *J. Funct. Anal.* 259(2010), 2045–2072.
35. (with Jean Dolbeault, Maria J. Esteban and Gabriella Tarantello), Radial symmetry and symmetry breaking for some interpolation inequalities, *Calc. Var. Partial Differential Equations* 42(2011), 561–585.
36. (with Stathis Filippas and Luisa Moschini), Sharp Trace Hardy-Sobolev-Maz'ya Inequalities and the Fractional Laplacian, *Arch. Rational Mech. Anal.* (electronic version) (2012).
37. (with S. Filippas and L. Moschini), Trace Hardy–Sobolev–Mazy'a inequalities for the half fractional Laplacian, *preprint* (2012).