

Ugur G. Abdulla

Associate Professor of Mathematics

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All Academic Degrees

- 1986 M.S., Azerbaijan State University, Baku, USSR
- 1988 Ph.D., Academy of Sciences, Baku, USSR
- 1994 High D.Sc.(Habilitation), Baku State University, Baku, Azerbaijan
- 1995 Professor, Baku State University, Baku, Azerbaijan
- 1999 Professor, Supreme Attestation Commission of the Azerbaijan Republic
- 2003 Dr.rer.nat., Saxon State Ministry of Sciences and Fine Arts, Dresden, Germany
- 2003 Dr.rer.nat.habil., Saxon State Ministry of Sciences and Fine Arts, Dresden, Germany

Employment

- 01.2004–present Associate Professor, Florida Institute of Technology
- 09.2002–08.2003 Guest Professor, University of Leipzig
- 05.2001–09.2002 Max-Planck Research Fellow, Max-Planck Institute, Leipzig
- 10.2000–05.2001 Visiting Professor, Bilkent University, Turkey
- 04.2000–09.2000 Max-Planck Research Fellow, Max-Planck Institute, Germany
- 1998–1999 Humboldt Research Fellow, University of Paderborn, Germany
- 1996–1997 Royal Society Research Fellow, University of Nottingham, UK
- 1995–present Professor, Baku State University, Baku, Azerbaijan
- 1993-1995 Associate Professor, Baku State University, Baku, Azerbaijan
- 1991-1993 Senior Research Scientist, Baku State University, Baku, Azerbaijan
- 1989-1991 Research Scientist, Academy of Sciences, Baku, USSR

Short Research Visits

- 05.2004–07.2004 Visiting Professor, International University of Bremen, Germany
- 11.1998–12.1998 Visiting Professor, University of Catania, Italy
- 12.1997–1.1998 Visiting Professor, University of Paderborn, Germany

Teaching Experience

1991-1995	Faculty of Applied Mathematics, Baku State University Analysis I-III, Complex Analysis, Functional Analysis, Partial Differential Equations, Nonlinear Parabolic Equations
10.2000–5.2001	College of Science, Bilkent University Calculus I,II, Linear Algebra, Partial Differential Equations
10.2002–07.2003	School of Math, and Comp. Science, University of Leipzig Linear Algebra, Free Boundary Problems
1.2004–present	College of Science, Florida Institute of Technology MTH1001-Calculus I MTH3101-Complex Variables MTH3201-Boundary Value Problems MTH4990-Undergraduate Research MTH5125-Applied Complex Variables MTH5130-Theory of Complex Variables MTH5230-Partial Differential Equations MTH6100-Sel. Top. Nonlinear Analysis: Applied PDEs MTH6999-Dissertation

Awards and Fellowships

1996-1997	Royal Society's Research Fellowships, Nottingham, UK
1998-1999	Alexander von Humboldt Research Fellowships, Paderborn, Germany
1998	CNR Visiting Professorships, Catania, Italy
2000-2002	Max-Planck Research Fellowships, Leipzig, Germany
2003	Alexander von Humboldt Research Fellowships, Bremen, Germany

Selected Recent Professional Activities

2000-2008	Member of the organizing committees and invited lecturer on the Third, Fourth and Fifth World Congresses of Nonlinear Analysis
2007–	Minisymposium co-organizer and invited lecturer in conference on Analysis of PDEs, December 10-12, Mesa, Arizona
2007–	Invited speaker in a special session AMS 2007 Fall Southeastern Meeting, November 3-4, Murfreesboro, TN
11.1.2007	Invited lecture at the Pittsburgh University
3.1.2006	Invited lecture at the Ohio State University
2006–	Minisymposium co-organizer and invited lecturer in conference on Analysis of PDEs to be held together with annual SIAM meeting, July 10-12 2006, Boston, Massachusetts
2.9-10.2005	Two invited lectures at Vanderbilt University
2005–	Associate Editor of the journal "Boundary Value Problems"

Recent Ph.D. and Undergraduate Students

Ogugua Onyejekwe– Ph.D. Student, Florida Tech
Jessica Cunningham, Nicole Livingston, Jan Varada–Undergraduate Research Students

Recent Postdoc and Visiting Associates

Summer 2006 V.Cataldo, University of Catania, Italy
C.Martinez-Garza, Assistant Professor, Penn State University

List of Publications—Ugur G. Abdulla

1. The well-posed nature of the problem of determining an unknown boundary of a domain in a similarity regime. *USSR Computational Mathematics and Mathematical Physics*, 1988, **28**, 100-101 (transl. by Pergamon Press).
2. Finite propagation velocity and local perturbations in nonlinear relaxation filtration. *Journal of Applied Mechanics and Technical Physics*, 1991, **5**, 750-754 (transl. by Plenum Publ. Corp., New York).
3. Peak regimes in problems for quasilinear heat equation with convection. *Computational Mathematics and Mathematical Physics*, 1991, **31**, 462-466 (transl. by Pergamon Press).
4. Unbounded solutions of the nonlinear equation of heat conduction with a sink. *Computational Mathematics and Mathematical Physics*, 1992, **32**, 1109-1120 (transl. by Pergamon Press).
5. On the existence of unbounded solutions of the nonlinear heat-conduction equation with a sink. *Computational Mathematics and Mathematical Physics*, 1993, **33**, 205-216 (transl. by Pergamon Press).
6. Unbounded solutions of the Kolmogorov-Petrovskii-Piskunov equation. *Computational Mathematics and Mathematical Physics*, 1993, **33**, 603-614 (transl. by Pergamon Press).
7. Numerical method of solving inverse problems for nonlinear differential equations. *Computational Mathematics and Mathematical Physics*, 1993, **33**, 1043-1057 (transl. by Pergamon Press).
8. On localization of unbounded solutions of the nonlinear heat equation with transfer. *Russian Acad. Sci. Dokl. Math.*, 1993, **47**, 298-301 (transl. by American Mathematical Society).
9. Unbounded solutions of the nonlinear parabolic equations. *Russian Mathematical Surveys*, 1993, **48**, (Materials of Joint Session of the Petrovsky Seminar on Differential Equations & Mathematical Problems of Physics and of the Moscow Mathematical Society, 15th Session, 18-21 January 1993).
10. On exact local bounds for the support of the solutions in problems for nonlinear parabolic equations. *Russian Mathematical Surveys*, 1994, **40**, **4**, (Materials of Joint Session of the Petrovsky Seminar on Differential Equations & Mathematical Problems of Physics and of the Moscow Mathematical Society, 16th Session, 18-21 January 1994).
11. Stability of symmetric travelling waves in the Cauchy problem for the Kolmogorov-Petrovsky-Piskunov equation. *Differential Equations*, 1994, **30**, 377-386 (transl. by Plenum Publ. Corp., New York).

12. On the space localization of unbounded perturbations in nonlinear heat conduction with transfer. *Applied Mathematics Letters*, 1994, **7**, 91-95.
13. Large time behaviour of the nonlinear infiltration equation. *Nonlinear Analysis: Theory, Methods and Applications*, 1994, **23**, 1353-1364.
14. Quasilinearization and inverse problems of nonlinear dynamics. *Journal of Optimization Theory and Applications*, 1995, **85**, 509-526.
15. Quasilinearization and inverse problems for nonlinear control systems. *Journal of Optimization Theory and Applications*, 1995, **85**, 527-543.
16. Exact local estimations of support of solutions for nonlinear parabolic equations. *Math. Sbornik*, 1995, **186**, 1085-1106 (transl. by American Mathematical Society).
17. On asymptotically exact local estimates for compactly supported solutions to a nonlinear parabolic equation with absorption. *Siberian Mathematical Journal*, 1995, **36**, 837-852 (transl. by Plenum Publ. Corp., New York).
18. On the unbounded solutions of the nonlinear heat equation with transfer. *Differential Equations*, 1995, **31**, 686-694 (transl. by Plenum Publ. Corp., New York).
19. Local structure of solutions of the reaction-diffusion equations. *Nonlinear Analysis: Theory, Methods and Applications*, 1997, **30**, 3153-3163.
20. Instantaneous shrinking of the support in problems for nonlinear degenerate parabolic equations. *Mathematical Notes*, 1998, **63**, 285-292. (Translated from *Matematicheskie Zametki*, 1998, **63**, 323-331).
21. Instantaneous shrinking and exact local estimations of interface in nonlinear diffusion absorption. *Advances in Math. Sciences and Appl.*, 1998, **8**, 483-503.
22. Reaction-Diffusion in Irregular Domains. Advanced Textbook, Baku State University, Baku, 1998, 75p.
23. Local structure of solutions of the Dirichlet problem for N-dimensional reaction-diffusion equations in bounded domains. *Advances in Differential Equations*, 1999, **4**, 197-224.
24. Reaction-diffusion in irregular domains. *Journal of Differential Equations*, 2000, **164**, 321-354.
25. Interface development and local solutions to reaction-diffusion equations. *SIAM Journal of Math. Anal.*, 2000, **32**, No. 2, 235-260, (together with J.R.King).
26. Reaction-Diffusion in a closed domain formed by irregular curves. *Journal of Math. Anal. and Applications*, 2000, **246**, 480-492.
27. Nonlinear diffusion in irregular domains with cusps. *Zeitschrift fuer Angewandte Mathematik und Mechanik*, 2000, **80**, Supplement. 3, 759-760. Issues devoted to the materials of the conference GAMM-99, 12-16 April, 1999, Metz, France.

28. On the Dirichlet problem for the nonlinear parabolic equations in non-smooth domains, Proceedings of the EQUADIFF-99, 1-8 August 1999, Berlin, Germany. Edited by B.Fiedler, K.Groeger and J.Sprekels, World Scientific, 2000, pp. 729-731.
29. On the Dirichlet problem for the nonlinear diffusion equation in non-smooth domains. *Journal of Math. Anal. and Applications*, 2001, **260**, 2, 384-403.
30. On the Dirichlet problem for the reaction-diffusion equations in non-smooth domains. *Nonlinear Analysis, Theory, Methods and Applications*, 2001, **47**, 2, 765-776.
31. Nonlinear diffusion in irregular domains, in Elliptic and Parabolic Problems, Rolduc and Gaeta 2001, World Scientific, 2002, pp.302-310.
32. Evolution of interfaces and explicit asymptotics at infinity for the fast diffusion equation with absorption, *Nonlinear Analysis, Theory, Methods and Applications*, 2002, **50**, 4, 541-560.
33. First boundary value problem for the diffusion equation. I. Iterated logarithm test for the boundary regularity and solvability, *SIAM Journal of Math. Anal.*, 2003, **34**, No.6, 1422-1434.
34. Well-posedness of the Dirichlet problem for the nonlinear diffusion equation in non-smooth domains, *Transactions of the Amer. Math. Society*, 2005, **357**, No.1, 247-265.
35. Multidimensional Kolmogorov-Petrovsky test for the boundary regularity and irregularity of solutions to the heat equation, *Boundary Value Problems*, 2005, **1**, No.2, 181-199.
36. Kolmogorov problem for the heat equation and its probabilistic counterpart, *Nonlinear Analysis*, 2005, **63**, No.5-7, 712-724.
37. Necessary and sufficient condition for uniqueness of solution to the first boundary value problem for the diffusion equation in unbounded domains, *Nonlinear Analysis*, 2006, **64**, No.5, 1012-1017
38. Wiener's criterion for the unique solvability of the Dirichlet problem in arbitrary open sets with non-compact boundaries, *Nonlinear Analysis*, 2007, **67**, No. 2, 563-578.
39. Reaction-Diffusion in nonsmooth and closed domains, *Boundary Value Problems*, Special issue: *Harnack Estimates, Positivity and Local Behaviour of Degenerate and Singular Parabolic Equations*, Vol. 2007 (2007), pp.28.
40. Wiener's criterion at ∞ for the heat equation, *Advances in Differential Equations*, 2008, **13**, No.5-6, 457-488.