

# CURRICULUM VITAE



**Fatma Gamze DÜZGÜN**

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Dipartimento di Matematica e Informatica, Università di Cagliari, Via Ospedale 72, 09124 Cagliari, Italy  
e-mail: [fatmagamze.duzgun@unica.it](mailto:fatmagamze.duzgun@unica.it), [gamzeduz@gmail.com](mailto:gamzeduz@gmail.com)

## **Educational Background**

- PostDoc, University of Florence, Italy, Feb 2014-Feb 2015
- PhD in Mathematics, Hacettepe University, Türkiye, 2014
- M.Sc in Mathematics, Hacettepe University, Türkiye 2008
- B.Sc in Mathematics, Hacettepe University, Türkiye, 2005

## **Theses**

- Ph.D Thesis: “*Investigation of Class of Nonlinear Diffusion Equations*” (2014, Supervisor Prof. Kamal Soltanov, Faculty of Science, Department of Mathematics, Hacettepe University).
- M.Sc Thesis: “*Investigation of the 3. Type Boundary Value Problem of an Emden-Fowler Type Equation*” (2008, Supervisor Prof. Kamal Soltanov, Faculty of Science, Department of Mathematics, Hacettepe University).

## **Research Interest**

Nonlinear Differential Equations (Parabolic type, Elliptic type), Nonlinear Diffusion Problems, Fractional Elliptic Equations, Anisotropic equations, Keller-Segel/ Chemotaxis Models, Existence, Uniqueness and Behavior of Solutions, Holder Regularity of Solutions, Harnack Estimates

## **Foreign Languages**

- English (advanced)
- Italian (advanced)
- French (intermediate)
- Spanish (intermediate)
- Greek (beginning)

## **Work Experience**

- RTT (Researcher Tenure Track) in Department of Mathematics and Informatics, University of Cagliari, Oct 2024-present.
- Assoc. Prof. of Analysis and Theory of Functions, Department of Mathematics, Hacettepe University, Beytepe-Ankara, Türkiye, November 2018-2024.
- Co-head of Department of Mathematics, Hacettepe University 2018-2021.
- Erasmus Coordinator of Department, Hacettepe University 2018-2024.
- Academic Visitor in Dept. of Math. “Ulisse Dini” of University of Florence (working with Prof. Vincenzo Vespri), 14.01.2018-17.06.2018.
- Researcher (postdoc under scholarship), University of Florence, Italy, 01.03.2014-28.02.2015
- Academic Visitor in Dept. of Math. “Ulisse Dini” of University of Florence (working with Prof. Vincenzo Vespri), 01.11.2012-01.05.2013.
- Research Assistant, Department of Mathematics, Hacettepe University, Beytepe-Ankara, Türkiye, 2005-2018.

## Papers

- Duzgun F. G., Marras M., Vernier-Piro S., “A class of fourth-order parabolic systems with time dependent coefficients with blow-up solutions”, *Discrete and Continuous Dynamical Systems - Series S* (2026)
- Cassanello F. M., Duzgun F. G., Iannizzotto A., “Hölder regularity for the fractional  $p$ -Laplacian, revisited”, *Advances in Calculus of Variations* (2025)
- Duzgun F. G., Iannizzotto A., Vespri V., “A clustering theorem in fractional Sobolev spaces”, *Annales Fennici Mathematici* (2025)
- Chiyo Y., Duzgun F. G., Frassu S., Viglialoro G., “Boundedness Through Nonlocal Dampening Effects in a Fully Parabolic Chemotaxis Model with Sub and Superquadratic Growth”, *Applied Mathematics and Optimization* (Feb 2024).
- Duzgun F. G., Mosconi S., Vespri V., “Harnack and Pointwise Estimates for Degenerate or Singular Parabolic Equations”, Chapter In book: *Contemporary Research in Elliptic PDEs and Related Topics*, 301-368 (July 2019).
- Duzgun F. G., Mosconi S., Vespri V., “Anisotropic Sobolev embeddings and the speed of propagation for parabolic equations”, *Journal of Evolution Equations.*, (September 2019).
- Duzgun F. G., Iannizzotto A., “Three nontrivial solutions for nonlinear fractional Laplacian equations”, *Advances in Nonlinear Analysis*, (May 2018).
- Chiti F., Fantacci R., Duzgun F. G., Vespri V., “A game theory inspired channel allocation policy for multi-radio Ad Hoc Communications” *Wireless Communications and Mobile Computing* (2016)
- Duzgun F. G., Gianazza U., Vespri V., “1-Dimensional Harnack Estimates”, *Discrete and Continuous Dynamical Systems - Series S* 9(3) (2016)
- Duzgun F. G., Soltanov K., “Existence, Uniqueness and Behaviour of Solution for Nonlinear Diffusion type Equation with Third Type Boundary Value”, *EMS Rendiconti Lincei Matematica e Applicazioni* (2015)
- Duzgun F. G., Fornaro S., Vespri V., “Interior Harnack Estimates: The State-of-the-Art for Quasilinear Singular Parabolic Equations” *Milan Journal of Mathematics* (2015).
- Fino A., Duzgun F. G., Vespri V., “Conservation of the Mass for Solutions to a Class of Singular Parabolic Equations”, *Kodai Mathematical Journal* (2014).
- Duzgun F. G., Soltanov K., “Some Mixed Problems for Semilinear Parabolic Type Equation”, *Journal of Applied Analysis and Computation* (2014).
- Duzgun F. G., Marcellini P., Vespri V., “Space Expansion for a Solution of an Anisotropic  $p$ -Laplacian Equation by Using a Parabolic Approach”, *Riv. Mat. Univ. Parma*, Vol 5 (2014).
- Duzgun F. G., Marcellini P., Vespri V., “An Alternative Approach to the Holder Continuity of Solutions to some Elliptic Equations”, *Nonlinear Analysis: Theory, Methods & Applications* (2014).
- Duzgun F. G., Soltanov K., “On Some Emden-Fowler Type Equations”, *AIP Conf. Proc.*, 1168, 377 (2009)

## Projects

- Research Project of GNAMPA, “Classificazione delle soluzioni di equazioni evolutive nonlocali” (2025, CUP E53C25002010001)
- “Partial differential equations and their role in understanding natural phenomena”, funded by Fondazione Banco di Sardegna (2023, CUP F23C25000080007)
- Research Project in Mathematics Dept. of University of Florence, “Regularity Results for a Larger Class of Anisotropic Operators”, 2018.
- Post Doc. Project in Information Eng. of University of Florence, “Sistemi wireless di nuova generazione per comunicazioni mobili professionali per la piattaforma WILIFE”, 2014-2015.
- The Scientific and Technological Research Council of Turkey (TUBİTAK)- The National Academy of Sciences of Ukraine (NASU) project “Solvability of nonlinear dynamical systems of mathematical physics, Exact integrability, and Analytic properties of solution manifolds”, scholarship, 2011-2014.

## Conferences and Academic Activities

- Erasmus+ Blended Intensive Program titled “Theoretical and numerical analysis of differential equations and their applications”, Dept. of Mathematics and Informatics, Cagliari University, Italy, July 2025 (Lecturer of the course&Local organizer at the University of Cagliari)
- Erasmus+ Teaching Mobility, Dept. of Mathematics and Mathematical Statistics, Umeå University, Sweden, May 2023
- Workshop in Mathematical Modelling and Analysis, Umeå University, Sweden, 2023 (invited speaker)
- Seminar in the Dept. of Mathematics and Mathematical Statistics, Umeå University, Sweden, 2023
- IV Workshop on Trends in Nonlinear Analysis, Cagliari, Italy, 2022 (invited speaker)
- The 26th International Conference on Difference Equations and Applications (ICDEA 2021), online conference, 26-31 July 2021 (speaker)
- Seminario di Calcolo delle Variazioni ed Equazioni alle Derivate Parziali, Dept. of Mathematics, University of Florence, Italy, Sept 2019.
- TURKEY-ITALY Colloquium on Applied Analysis and Differential Equations (TICAD 2019), Hacettepe University, Ankara, Turkey, 10-11 July 2019 (organizer)
- European Women in Mathematics General Meeting 2018, Celebrating 30 years of EWM, Graz, Austria, September 2018 (speaker: PDEs around the world-representation of Asia).
- General Analysis Seminars, Dept. of Mathematics, University of Padova, Italy, April 2018.
- Academic visitor in Math. Dept. "Ulisse Dini" of Florence University (collaboration with Prof.Dr. Vincenzo Vespri), 14.01.2018-17.06.2018.
- III Workshop on Trends in Nonlinear Analysis, Cagliari, Italy, 2017
- The 11th ISAAC Congress, Vaxjo, Sweden, 2017 (speaker).

- Harnack's Inequalities and Nonlinear Operators, Cortona, Italy, 2017 (speaker).
- Research Meeting on Non-Local Operators, Cagliari, Italy, 2016 (invited speaker).
- The 11<sup>th</sup> AIMS Conference on Dynamical Systems, Differential Equations and Applications, Orlando, USA, 2016 (speaker)
- XL Summer School on Mathematical Physics, Ravello, Italy, 2015 (speaker)
- Workshop in Nonlinear PDEs, Brussels, Belgium, 2015 (speaker)
- Post Doc. in Department of Information Engineering, Florence University, Italy (01.03.2014-28.02.2015)
- CICAM 7- Seventh China-Italy Colloquium on Applied Mathematics, Palermo, Italy, 8-11 September 2014 (speaker).
- CIME-Centro Internazionale Matematico Estiva/ Vector Valued Partial Differential Equations and Applications, Cetraro, Italy, July 2013.
- Academic Visitor in Dept. of Math. "Ulisse Dini" of University of Florence (working with Prof.Dr. Vincenzo Vespri), 01.11.2012-01.05.2013.
- The International Society for Analysis, its Applications and Computation (ISAAC), Moscow, Russia, 2011 (speaker).
- 6th Ankara Mathematics Days, Hacettepe University, Ankara, Turkey, 2011.
- Mathematical Analysis, Differential Equations and Their Applications, Bulgaria, 2010 (speaker).
- 7th International Conference of Numerical Analysis and Applied Mathematics, Crete, Greece, 2009 (speaker).
- XXI. National Mathematics Symposium, Koç University, Istanbul, Türkiye, 2008.
- XX. National Mathematics Symposium, Erzurum, Türkiye, 2007 (speaker).
- XIX. National Mathematics Symposium, Kütahya, Türkiye, 2006.