

Curriculum Vitae

FULL NAME AND
DATE OF CV

Mourgoglou Michail
Male
02/12/2018

DATE AND PLACE
OF BIRTH,
NATIONALITY,
CURRENT
RESIDENCE

02/11/1981, Thessaloniki, Greece
Greek
Bilbao, Spain

CONTACT
INFORMATION

Departamento de Matemáticas
Universidad del País Vasco
Barrio Sarriena s/n
48940 Leioa, Bizkaia
Spain

Email: michail.mourgoglou@ehu.eus

EDUCATION AND
DEGREES AWARDED

Ph.D. in Mathematics
University of Missouri-Columbia, USA, July 2011
Thesis Advisor: Steve Hofmann
Thesis Title: “*Endpoint solvability results for divergence form, complex elliptic equations.*”

M.S. in Mathematics
Aristotle University of Thessaloniki, Greece, June 2007
Thesis Advisor: Dimitrios Betsakos
Thesis Title: “*Estimates for Harmonic Measure on the Complex Plane.*”

B.S. in Mathematics (Departmental Highest Honors)
Aristotle University of Thessaloniki, Greece, July 2005

APPOINTMENTS

Ikerbasque Research Fellow–Tenure track: Universidad del País Vasco UPV/EHU
12/2016–12/2021.

Visiting Fellow: BCAM-Basque Center for Applied Mathematics
10/2016–12/2016 (Mentor: Carlos Pérez).

Postdoctoral Researcher: Universitat Autònoma de Barcelona
09/2015–09/2016 (Mentor: Xavier Tolsa).

Postdoctoral Researcher: Centre de Reserca Matemàtica (CRM)
09/2014–09/2015 (Mentor: Xavier Tolsa).

Postdoctoral Researcher: Institut des Hautes Études Scientifiques (IHÉS)
09/2013–08/2014 (Mentor: Pascal Auscher).

Postdoctoral Researcher: Université Paris-Sud 11, Orsay
09/2011–09/2013 (Mentors: Pascal Auscher, Guy David).

Research Assistant: University of Missouri-Columbia,
09/2010–07/2011 (Advisor: Steve Hofmann).

Research Assistant: University of Missouri-Columbia,
Spring 2010 (Advisor: Steve Hofmann).

Teaching Assistant: University of Missouri-Columbia, Fall 2009.

Teaching Assistant: University of Missouri-Columbia, 2008-2009.

RESEARCH
INTERESTS

Harmonic analysis, Partial Differential Equations, Geometric Measure Theory.

PUBLICATIONS
IN REVERSE
CHRONOLOGICAL
ORDER

1. *A new approach to non-homogeneous local Tb theorems*, H. Martikainen, M. Mourgoglou and E. Vuorinen, to appear in **J. Anal. Math.** (2015).
2. *Absolute continuity of harmonic measure for domains with lower regular boundaries*, M. Akman, J. Azzam and M. Mourgoglou, to appear in **Adv. Math.**, arXiv:1605.07291 (2016).
3. *Tangent measures of elliptic measure and applications*, J. Azzam and M. Mourgoglou, to appear in **Anal. PDE**, arXiv:1708.03571 (2017).
4. *On a two-phase problem for harmonic measure in general domains*, J. Azzam, M. Mourgoglou, X. Tolsa and A. Volberg, to appear in **Amer. J. Math.**, arXiv:1609.06133 (2016).
5. *Failure of L^2 boundedness of gradients of single layer potentials for measures with zero low density*. J. M. Conde Alonso, M. Mourgoglou and X. Tolsa, **Math. Ann.**, <https://doi.org/10.1007/s00208-018-1729-1> (2018).
6. *On Harmonic Measure and Rectifiability in Uniform Domains*. M. Mourgoglou, **J. Geom. Anal.**, <https://doi.org/10.1007/s12220-018-0035-1> (2018).
7. *Uniform rectifiability in terms of Carleson measure estimates and ε -approximability of bounded harmonic functions*. J. Garnett, M. Mourgoglou and X. Tolsa, **Duke Math. J.**, 167 (2018), no. 8, 1473–1524.
8. *Improved Cotlar’s inequality in the context of local Tb theorems*, H. Martikainen, M. Mourgoglou and X. Tolsa, **J. Funct. Anal.**, 274 (2018), no. 5, 1255–1275.
9. *Tangent measures and absolute continuity of harmonic measure*, J. Azzam and M. Mourgoglou, **Rev. Mat. Iberoam.**, 34 (2018), no. 1, 305–330.
10. *Harmonic measure and Riesz transform in uniform and general domains*, M. Mourgoglou and X. Tolsa, to appear in **J. Reine Angew. Math. (Crelle’s Journal)**, <https://doi.org/10.1515/crelle-2017-0037> (2017).
11. *The one-phase problem for harmonic measure in two-sided NTA domains*, J. Azzam, M. Mourgoglou and X. Tolsa, **Anal. PDE** 10 (2017), no. 3, 559–588.
12. *Singular sets for harmonic measure on locally flat domains with locally finite surface measure*, J. Azzam, M. Mourgoglou and X. Tolsa, **Int. Math. Res. Not.**, 2017 (2017), no. 12, 3751–3773.

13. *Mutual absolute continuity of interior and exterior harmonic measure implies rectifiability*, J. Azzam, M. Mourougolou and X. Tolsa, **Comm. Pure Appl. Math.**, Vol. LXX (2017), 2121–2163.
14. *Non-homogeneous square functions on general sets: suppression and big pieces methods*, H. Martikainen, M. Mourougolou and E. Vuorinen, **J. Geom. Anal.**, 27 (2017), no. 4, pp 3176–3227.
15. *Rectifiability of harmonic measure*, J. Azzam, S. Hofmann, J. M. Martell, S. Mayboroda, M. Mourougolou, X. Tolsa and A. Volberg, **Geom. Funct. Anal. (GAFA)**, 26 (2016), no. 3, 703–728.
16. *Note about square function estimates and uniformly rectifiable measures*, H. Martikainen and M. Mourougolou, **Proc. Amer. Math. Soc.**, 144 (2016), 3455–3463
17. *Harmonic measure is rectifiable if it is absolutely continuous with respect to the co-dimension one Hausdorff measure*, J. Azzam, S. Hofmann, J. M. Martell, S. Mayboroda, M. Mourougolou, X. Tolsa and A. Volberg, **C. R. Acad. Sci. Paris Sér. I Math.**, 354 (2016), no. 4, 351–355.
18. *A characterization of 1-rectifiable doubling measures with connected supports*, J. Azzam and M. Mourougolou, **Anal. PDE**, 9 (2016), no. 1, 99–109.
19. *On angles determined by fractal subsets of the Euclidean space via Sobolev bounds for bi-linear operators*, A. Iosevich, M. Mourougolou, and E. Palsson, **Math. Res. Lett.**, 23 (2016), no. 6, 1737–1759.
20. *Boundedness of non-homogeneous square functions and L^q type testing conditions with $q \in (1, 2)$* , H. Martikainen and M. Mourougolou, **Math. Res. Lett.**, 22, no. 5 (2015), 1417–1457.
21. *On sets of volumes determined by subsets of \mathbb{R}^d* , A. Greenleaf, A. Iosevich and M. Mourougolou, **Forum Math.**, 27 (2015), no. 1, 635–646.
22. *Layer potentials and boundary value problems for elliptic equations with complex L^∞ coefficients satisfying the small Carleson measure norm condition*, S. Hofmann, S. Mayboroda and M. Mourougolou, **Adv. Math.**, 270 (2015), 480–564.
23. *Representation and uniqueness for boundary value elliptic problems via first order systems*, P. Auscher and M. Mourougolou, to appear in **Rev. Mat. Iberoam.**, arXiv:1404.2687 (2014).
24. *Square functions with general measures II*, H. Martikainen, M. Mourougolou and T. Orponen, **Indiana Univ. Math. J.**, 63 (2014), no. 5, 1249–1279.
25. *Boundary layers, Rellich estimates and extrapolation of solvability for elliptic systems*, P. Auscher and M. Mourougolou, **Proc. Lond. Math. Soc.**, (3) 109 (2014), no. 2, 446–482.
26. *Square functions with general measures*, H. Martikainen and M. Mourougolou, **Proc. Amer. Math. Soc.**, 142 (2014), 3923–3931.
27. *A local Tb theorem for square functions in domains with Ahlfors–David regular boundaries*, A. Grau de la Herran and M. Mourougolou, **J. Geom. Anal.**, 24 (2014), no. 3, 1619–1640.
28. *On L^2 solvability of BVPs for elliptic systems*, P. Auscher, A. McIntosh and M. Mourougolou, **J. Fourier Anal. Appl.**, 19 (2013), no. 3, 478–494.

29. *On the Mattila-Sjölin theorem for distance sets*, A. Iosevich, M. Mouroglou, and K. Taylor, **Ann. Acad. Sci. Fenn. Math.**, 37 (2012), no. 2, 557–562.
30. *On sets of directions determined by subsets of \mathbb{R}^d* , A. Iosevich, M. Mouroglou and St. Senger, **J. Anal. Math.**, 116 (2012), 355–369.

PREPRINTS
IN REVERSE
CHRONOLOGICAL
ORDER

1. *Harmonic measure and quantitative connectivity: geometric characterization of the L_p solvability of the Dirichlet problem. Part II*, J. Azzam, M. Mouroglou and X. Tolsa, preprint, arXiv:1803.07975 (2018), submitted.
2. *A two-phase free boundary problem for harmonic measure and uniform rectifiability*, J. Azzam, M. Mouroglou and X. Tolsa, preprint, arXiv:1710.10111 (2017). submitted.
3. *Uniform rectifiability, elliptic measure, square functions, and ε -approximability via an ACF monotonicity formula*. J. Azzam, J. Garnett, M. Mouroglou and X. Tolsa, arXiv:1612.02650 (2017), submitted.
4. *Approximate tangents, harmonic measure and domains with rectifiable boundaries*, M. Mouroglou, arXiv:1602.00677 (2016), submitted.
5. *Rectifiability of harmonic measure in domains with porous boundaries*, J. Azzam, M. Mouroglou and X. Tolsa, unpublished preprint, arXiv:1505.06088 (2015).

GRANTS, HONORS
AND AWARDS

Grant MTM-2017-82160-C2-2-P: Ministerio de Economía y Competitividad 2017-2020. (Principal Investigator)

Research Fellowship: Ikerbasque Research Fellowship 2016-2021.

Post-doctoral Scholarship: European Post-Doctoral Institute for Mathematical Sciences (EPDI), 2013–2015.

Post-doctoral Scholarship: Fondation Mathématiques Jacques Hadamard (FMJH), Sophie Germain International Post-doctoral Scholarship, 2011–2013.

Member of the ANR project: “Harmonic Analysis at its Boundaries”, ANR-12-BS01-0013-01.

Graduate Student Travel Grant: American Mathematical Society (AMS), January 2011.

Graduate Student Travel Grant: University of Missouri-Columbia, 2011.

Research Fellow: University of Missouri-Columbia, 2007-2008.

Honorary Scholarship: for graduate student excellence, Department of Mathematics, Aristotle University of Thessaloniki, 2006–2007.

Honorary Scholarship: for student excellence, State Scholarships Foundation (I.K.Y, Greece), 2000.

INVITED TALKS

- 03/07/2018: International Workshop on Singular Integral Operators, June 3-6, 2018, Tianjin, China.
- 26/06/2018: First Congress of Greek Mathematicians FCGM-2018, June 25-30, 2018, Athens, Greece, Special Session on "Analysis".
- 08/05/2018: Research Term on Real Harmonic Analysis and Its Applications to Partial Differential Equations and Geometric Measure Theory, ICMAT, Madrid, Spain, May 7-June 8, 2018.
- 20/03/2018: PDE Seminar, Department of Mathematics, University of Reading.
- 08/02/2018: Analysis Seminar, Department of Mathematics, Universidad del País Vasco.
- 21/12/2017: Analysis Meeting, December 21-22, 2017, Department of Mathematics, University of Thessaloniki.
- 04/12/2017: Analysis Seminar, Department of Mathematics, Universitat Autònoma de Barcelona.
- 10/07/2017: 5-hour mini-course, Third Summer School on Harmonic Analysis and PDE, BCAM, Bilbao (Spain), 10/07-14/07/2017.
- 24/02/2017: Mathematical Analysis Days BCAM-UR in Logroño, Logroño (Spain), 23-24/02/2017.
- 31/01/2017: Congreso Bienal de la Real Sociedad Matemática Española (RSME), Special Session in "Harmonic Analysis", Zaragoza (Spain), 30/01-03/02/2017.
- 31/10/2016: Analysis Seminar, Department of Mathematics, University of Edinburgh.
- 03/10/2016: Analysis Seminar, Department of Mathematics, Universidad del País Vasco.
- 05/02/2016: Analysis Seminar, Department of Mathematics, University of Athens.
- 22/12/2015: Workshop in Analysis, Department of Mathematics, University of Thessaloniki.
- 18/11/2015: Analysis Seminar, Department of Mathematics, University of Helsinki.
- 17/11/2014: Analysis Seminar, Department of Mathematics, Universitat Autònoma de Barcelona.
- 20/12/2013: Analysis Seminar, Department of Mathematics, University of Thessaloniki.
- 22/10/2013: Analysis Seminar, Department of Mathematics, University of Helsinki.
- 25/06/2013: Analysis Seminar, Department of Mathematics, University of Thessaloniki.
- 04/06/2013: Research Term on Real Harmonic Analysis and Applications to PDE, ICMAT, Madrid, Spain, April-June 2013.
- 28/01/2013: Séminaire d'Analyse Harmonique, Université Paris-Sud 11.
- 25/09/2012: Séminaire d'Analyse, Institut Fourier, Grenoble.
- 13/06/2012: 9th International Conference on Harmonic Analysis and Partial Differential Equations, El Escorial, Madrid, Spain, June 11-15, 2012, Short talk.
- 14/05/2012: Analysis Seminar, Department of Mathematics, Universitat Autònoma de Barcelona.

10/05/2012: Analysis Seminar, Department of Mathematics, University of Edinburgh.
04/05/2012: Analysis Seminar, Department of Mathematics, University of Thessaloniki.
13/03/2012: Analysis Seminar, Department of Mathematics, University of Cyprus.
08/01/2011: 2011 Joint Mathematics Meeting of the MAA and the AMS, Special Session on "Harmonic Analysis and Partial Differential Equations", New Orleans.
14/12/2010: Analysis Seminar, Department of Mathematics, University of Crete.
30/11/2010: Analysis Seminar, Department of Mathematics, University of Missouri-Columbia.
12/01/2010: Analysis Seminar, Department of Mathematics, University of Thessaloniki.

VISITS

13/03/2018–21/03/2018: University of Reading.
Invited by N. Katzourakis.
22/05/2017–02/06/2017: University of Helsinki.
Invited by H. Martikainen.
01/03/2017–31/03/2017: Universitat Autònoma de Barcelona.
Invited by X. Tolsa.
30/10/2015–05/11/2016: University of Edinburgh.
Invited by J. Azzam.
10/11/2015–21/11/2015: University of Helsinki.
Invited by T. Hytönen and H. Martikainen.
17/10/2013–03/11/2013: University of Helsinki.
Invited by T. Hytönen and H. Martikainen.
03/08/2010–03/09/2010: University of Rochester.
Invited by A. Greenleaf and A. Iosevich.

TEACHING EXPERIENCE

"Measure Theory and Integration", Undergraduate course, Universidad del País Vasco, Fall 2018-2019.
"Elliptic PDE and Boundary Value Problems", Advanced course/seminar, Universitat Autònoma de Barcelona, Spring 2016.
"Harmonic measure and Geometric Measure Theory", Advanced course/seminar, Universitat Autònoma de Barcelona, Spring 2015.
"Finite Math", Undergraduate course, University of Missouri-Columbia, Fall 2009.
"Calculus II", Undergraduate course, University of Missouri-Columbia, 2008-2009.