

Murat Akman

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Employment

- July 2019 **University of Essex, Colchester, UK.**
Lecturer (Assistant Professor)
- Aug 2016–July 2019 **University of Connecticut, Storrs, CT.**
Evarist Giné Assistant Research Professor, Mentor: Matthew Badger
- Nov 2014–Aug 2016 **Consejo Superior de Investigaciones Científicas, Madrid, Spain.**
Postdoctoral Fellow at *Instituto de Ciencias Matemáticas*, Mentor: José María Martell

Fellowships

- Jan 2017–May 2017 **Mathematical Sciences Research Institute (MSRI), Berkeley, California.**
Postdoctoral Fellow in the *Harmonic Analysis* program, Mentor: Tatiana Toro
- Sept 2013–Dec 2013 **Institut Mittag-Leffler, Stockholm, Sweden.**
Postdoctoral Fellow in the *Evolutionary Problems* semester

Education

- May 2014 **Ph.D., Mathematics, University of Kentucky,** Adviser: John Lewis.
- May 2012 **M.S., Mathematics, University of Kentucky.**
- June 2009 **M.S., Mathematics, Middle East Technical University,** Ankara, Turkey.
- June 2006 **B.S., Mathematics, Middle East Technical University,** Ankara, Turkey.

Research Interests

Analysis, PDEs, Potential Theory, Geometric Measure Theory.

Publications

Submitted

15. **On a Theorem of Wolff Revisited.**, with John Lewis and Andrew Vogel.
(2020), submitted, arXiv:2002.04677, 38 pages
14. **On a Bernoulli-type overdetermined free boundary problem.**, with Agnid Banerjee and Mariana Smit Vega Garcia.
(2019), submitted, arXiv: 1911.02801, 21 pages
13. **Perturbation of elliptic operators on 1-Sided NTA domains satisfying the CDC**, with Steve Hofmann, José María Martell, and Tatiana Toro.
(2019), arXiv: 1901.08261, 71 pages.

Published or To appear

12. **Note on an eigenvalue problem with applications to a Minkowski type regularity problem in \mathbb{R}^n** , with John Lewis and Andrew Vogel.
Calc. Var. Partial Differential Equations **59** (2020), no:2, Paper no 47.
11. **The Brunn-Minkowski inequality and A Minkowski problem for \mathcal{A} -harmonic Green's function**, with John Lewis, Olli Saari, and Andrew Vogel.
To appear in Advances in Calculus of Variations, arXiv:1810.03752, 76 pages.
10. **Note on an Eigenvalue problem for an ODE originating from a homogeneous p -harmonic function**, with John Lewis and Andrew Vogel.
This is a survey article dedicated to V. G. Maz'ya on the occasion of his 80th birthday. Algebra i Analiz **31** (2019), no:2, 75-87

9. **Absolute continuity of harmonic measure for domains with lower regular boundaries**, with Jonas Azzam and Mihalis Mourgoglou.
Advances in Mathematics **345** (2019), 1206–1252.
8. **The Brunn-Minkowski inequality and a Minkowski problem for nonlinear capacity**, with Jasun Gong, Jay Hineman, John Lewis, Andrew Vogel.
To appear in Memoirs of the AMS, arXiv:1709.00447, 108 pages.
7. **Rectifiability, interior approximation and Harmonic Measure**, with Simon Bortz, Steve Hofmann, and José María Martell.
To appear in Arkiv för Matematik, 2016, arXiv:1509.0706, 18 pages.
6. **σ -finiteness of elliptic measures for quasilinear elliptic PDE in space**, with John Lewis and Andrew Vogel.
Advances in Mathematics, **309** (2017), 512–557.
5. **On the absolute continuity of p -harmonic measure and surface measure in Reifenberg flat domains**.
Pacific Journal of Mathematics **286**-1 (2017), 25–37.
4. **Rectifiability and elliptic measures on 1-sided NTA domains with Ahlfors-David regular boundaries**, with Matthew Badger, Steve Hofmann, and José María Martell.
Trans. Amer. Math. Soc. **369** (2017), no. 8, 5711–5745
3. **Hausdorff dimension and σ -finiteness of p -harmonic measures in space when $p \geq n$** , with John Lewis and Andrew Vogel.
Nonlinear Analysis: Theory, Methods & Applications, **129**:198–216, 2015.
2. **On the dimension of a certain measure in the plane**.
Ann. Acad. Sci. Fenn. Math., **39**(2014), 187–209.
1. **On the logarithm of the minimizing integrand for certain variational problems in two dimensions**, with John Lewis and Andrew Vogel.
Analysis and Mathematical Physics, Volume 2, Number 1(2012), 79–88.

Talks

Plenary Talks

- October 2017 Northeastern Analysis Meeting, University of Albany
- Nov. 2017 Nonsmooth Analysis: a Workshop for Postdocs, University of Connecticut
- January 2015 Workshop on HA, PDEs and GMT, ICMAT, Madrid, Spain

Seminar Talks

- May 2019 Analysis & Applications Seminar, UAM-ICMAT, Madrid, Spain
- March 2019 Analysis Seminar, Temple University
- October 2018 Inverse Problems and Analysis Seminar, University of Delaware
- October 2018 Analysis Seminar, Brown University
- March 2018 Analysis Seminar, University of Pennsylvania
- January 2018 Analysis Seminar, Brown University
- Oct. 2017 PDE and Differential Geometry Seminar, University of Connecticut
- May 2017 Rainwater Seminar, University of Washington
- March 2017 Harmonic Analysis Seminar, MSRI
- Dec. 2016 Analysis and PDE Seminar, Worcester Polytechnic Institute
- Nov. 2016 Analysis and PDE Seminar, University of Kentucky
- Nov. 2016 Analysis Learning Seminar, University of Connecticut
- April 2016 Seminario de Análisis y Aplicaciones, Universidad Autónoma de Madrid, Spain
- April 2016 Seminari d'edps i aplicacions, Universitat Politècnica de Catalunya, Barcelona, Spain
- April 2015 General Seminar, Mimar Sinan Arts and Fines University, Istanbul, Turkey
- Dec. 2014 Analysis and Stochastic Seminar, Uppsala University, Sweden

- Dec. 2014 HAPDEGMT working group seminar, Madrid, Spain
- Feb. 2014 Monday Analysis Seminar, Hokkaido University, Sapporo, Japan
- Nov. 2013 Evolutionary problems, Institut Mittag-Leffler, Sweden

Short/Conference Talks

- Nov. 2018 Mid-Atlantic Analysis Meeting, Virginia Tech
- Sept. 2018 Northeast Analysis Network Conference, University of Albany
- Jan. 2019 AMS SS on Harmonic Analysis, PDEs, and Applications, JMM, Baltimore
- March 2019 AMS SS on Interactions between GMT, PDE, and HA, University of Hawaii at Manoa
- May 2018 Workshop on Real HA and its Applications to PDEs and GMT: on the occasion of the 60th birthday of Steve Hofmann, ICMAT, Madrid, Spain
- Nov. 2018 AMS SS on Harmonic analysis and PDEs, University of Arkansas
- April 2018 AMS SS on GMT and PDEs, Portland State University
- Sept. 2017 Northeast Analysis Network Conference, Syracuse University
- Sept. 2017 Prairie Analysis Seminar 2017, Kansas State University
- Sept. 2016 AMS SS on Geometric Aspects of Harmonic Analysis, Bowdoin College
- June 2016 10th International Conference on Harmonic Analysis and PDEs, El Escorial, Madrid
- June 2016 10th Conference on Harmonic Analysis and Approximation Theory, Centre de Recerca Matemàtica, Barcelona
- April 2014 AMS SS on Complex Function Theory and Special Functions, Texas Tech University
- March 2014 AMS SS on Complex Analysis, Probability and Metric Geometry, University of Tennessee
- January 2014 AMS SS on Fractal Geometry, JMM, Baltimore
- Nov. 2013 The 72nd Midwest PDE Seminar, Purdue University
- October 2013 AMS SS on Interactions between Geometric and Harmonic Analysis, Washington University
- April 2013 38th Spring Lecture Series, University of Arkansas
- March 2013 The 3rd Ohio River Analysis Meeting, University of Cincinnati
- January 2013 Session on GMT and Harmonic Analysis, JMM, San Diego
- July 2012 Calculus of Variations and PDEs, Szczawnica
- April 2012 The 2nd Ohio River Analysis Meeting, University of Kentucky
- March 2012 AMS SS on Complex Analysis, Geometry and Probability, University of Kansas

Expository Talks at University of Kentucky Grad Student Seminar

- 2010-2013 The Kakeya Problem, Quasiregular mapping and p-Laplace equation, Extremal length, The Yamabe problem, Little Picard's theorem and Rickman's theorem

Poster Presentations

- August 2013 XXII Ind Rolf Nevanlinna Colloquium 2013, University of Helsinki
- June 2013 CNA Summer School Topics in Nonlinear PDEs and Calculus of Variations, and Applications in Materials Science, Carnegie Mellon University
- April 2013 The 71st Midwest PDEs Seminar, University of Michigan

Scholarships and Grants

- 2018-2020 AMS Simons Travel Grant
- 2013-2014 AMS Grad Student Travel Grant to attend JMM and sectional meetings
- Nov. 2013 IMA Travel Support to attend the Midwest PDE conference
- 2010-2013 Dissertation Enhancement Award from University of Kentucky
- 2010-2013 Summer Research Assistanship award, University of Kentucky
- 2011-2013 Graduate Student Travel Support, University of Kentucky

Teaching Experience

- Fall 2018 Ordinary Differential Equations at University of Connecticut
- Fall 2018 Analysis I at University of Connecticut
- Spring 2018 Partial Differential Equations at University of Connecticut
- Fall 2016-17 Differential Equations for Applications at University of Connecticut
- 2010-2013 Recitation session for Calculus I-II-III at University of Kentucky
- 2006-2009 Recitation session for Calculus for Mathematics Students I-II Middle East Technical University

Advising

- Fall 2017 - *David McDonald* on his honors thesis at UConn
- Spring 2018 Thesis title: Harmonic functions and harmonic measure

Professional Activities

- Spring 2019 On the thesis committee of Juan Cavero at Universidad Autónoma de Madrid
- April 2019 Co-organizer for the special session on “Regularity Theory of PDEs and Calculus of Variations on Domains with Rough Boundaries” at the AMS sectional meeting at the University of Connecticut Hartford
- March 2019 Co-organizer for the graduate student conference on “Geometric and Harmonic Analysis” at University of Connecticut
- April 2018 Co-organizer for the special session on “Regularity of PDEs on Rough Domains” at the AMS sectional meeting at Northeastern University
- Fall 2017- Refereed Journal Articles for *Memoirs of the AMS*, *Advances in Calculus of Variations*, *Transactions of the AMS*, *Proceedings of the AMS*
- Fall 2016- Reviewer for Mathematical Reviews, 12 reviews as of May 2018
- Fall 2017- Co-organizer for the Analysis Learning Seminar at University of Connecticut
- Fall 2014- Organizer of the working group on Harmonic Analysis, Partial Differential Equations, and
- Spring 2015 Geometric Measure Theory seminar at ICMAT
- Fall 2010 Secret Seminar at University of Kentucky