

Murat Akman

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Employment

- Aug 2016– **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

In Progress

14. **Note on an eigenvalue problem with applications to a Minkowski type regularity problem in \mathbb{R}^3 ,** with John Lewis and Andrew Vogel.
in preparation
13. **Free boundary regularity of harmonic measure on multi-phase configurations,** with Matthew Badger.
in preparation

Submitted

12. **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.
11. **The Brunn-Minkowski inequality and A Minkowski problem for \mathcal{A} -harmonic Green's function,** with John Lewis, Olli Saari, and Andrew Vogel.
submitted(2018), arXiv:1810.03752, 76 pages.

Published or To appear

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 to appear in Maz'ya 80th birthday issue of Algebra & Analiz. (2018) 13 pages.
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

- 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