

Hamid Hezari

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Research Interests

- ◇ Microlocal Analysis and its applications in PDE and Spectral Geometry

Positions

- ◇ Associate Professor, July 2018 -current
- ◇ Assistant Professor, Fall 2012 -June 2018
- ◇ MSRI Postdoctoral Fellow, Inverse Problems and Applications Program, MSRI, Fall 2010
- ◇ CLE Moore Instructor, MIT, Fall 2009 to Summer 2012

Education

- ◇ Ph.D. in Mathematics
Johns Hopkins University, 2004 to 2009
- ◇ Continuing studies in Mathematics as a Ph.D. student
Simon Fraser University, 2004
- ◇ M.Sc. in Mathematics
Sharif University, Tehran, Iran, 2003
- ◇ B.Sc. in Mathematics
Sharif University, Tehran, Iran, 2001

Publications

23. “Equidistribution of toral eigenfunctions along hypersurfaces” (with Gabriel Rivière), to appear in **Revista Matemática Iberoamericana**, 2018.
22. “Quantitative upper bounds for Bergman kernels associated to smooth Kähler potentials” (with Hang Xu), to appear in **Mathematical Research Letters**, 2018
21. “Off-diagonal asymptotic properties of Bergman kernels associated to analytic Kähler potentials” (with Zhiqin Lu and Hang Xu), to appear in **International Mathematics Research Notices**, 2018
20. “Quantum ergodicity and L^p norms of restrictions of eigenfunctions”, **Communications in Mathematical Physics**, Vol. 357, No 3, 2018
19. “Inner radius of nodal domains of quantum ergodic eigenfunctions”, **Proceedings of American Mathematical Society**, Vol 146, No 11, 2018
18. “Applications of small scale quantum ergodicity in nodal sets”, **Analysis and PDE**, Vol. 11, No 4, 2018
17. An **appendix** to “Dynamical spectral rigidity among Z_2 -symmetric strictly convex domains close to a circle” by De Simoi, Kaloshin, and Wei (joint with the authors), **Annals of Mathematics**, Vol. 186, No. 1, 2017
16. “Robin spectral rigidity of nearly circular domains with a reflectional symmetry”, to appear in **Communications in Partial Differential Equations**, Vol 42, No 9, 2017

15. “The Neumann isospectral problem for trapezoids” (with Zhiqin Lu and Julie Rowlett), **Annales Henri Poincaré**, Vol. 18, No 12, 2017
14. “Quantitative equidistribution properties of toral eigenfunctions” (with Gabriel Rivière). **Journal of Spectral Theory**, Vol. 7, No.2, 2017
13. “ L^p norms, nodal sets, and quantum ergodicity” (with Gabriel Rivière). **Advances in Mathematics**, Vol. 290, 2016
12. “Asymptotic expansion of the Bergman kernel via perturbation of the Bargmann-Fock model” (with Casey Kelleher, Shoo Seto, and Hang Xu). **Journal of Geometric Analysis**, Vol. 26, No. 4, 2016
11. “Completeness of boundary traces of eigenfunctions” (with Xiaolong Han, Andrew Hassell, and Steve Zelditch). **Proceedings of the London Mathematical Society**, Vol. 111, No. 3, 2015
10. “A Fulling-Kuchment theorem for $1D$ harmonic oscillator” (with Victor Guillemin). **Inverse Problems**, Vol. 28, No. 4, 2012
9. “Inverse problems in spectral geometry, a survey on inverse spectral problems” (with Kiril Datchev). **Inverse Problems and Applications: Inside Out II**, MSRI Publications, No. 60, 2012
8. “A natural lower bound for the size of nodal sets” (with Christopher Sogge). **Analysis and PDE**, Vol. 5, No. 5, 2012
7. “Lower bounds for volumes of nodal sets: an improvement of a result of Sogge-Zelditch” (with Zuoqin Wang). **AMS Special Issue on Spectral Geometry**, 2012
6. “Resonant uniqueness of radial semiclassical Schrödinger operators” (with Kiril Datchev). **Applied Mathematics Research eXpress**, Vol. 2012, No. 1, 2012
5. “Spectral uniqueness of radial semiclassical Schrödinger operators” (with Kiril Datchev and Ivan Ventura). **Mathematical Research Letters**, Vol. 18, No. 3, 2011
4. “ C^∞ spectral rigidity of the ellipse” (with Steve Zelditch). **Analysis and PDE**, Vol. 5, No. 5, 2012
3. “Inverse spectral problems for $(Z/2Z)^n$ -symmetric domains in R^n ” (with Steve Zelditch). **GAFA** Vol. 20, No. 1, 2010
2. “Inverse spectral problems for Schrödinger operators”. **Communications in Mathematical Physics**, Vol 288, No 3, 2009
1. “Complex zeros of eigenfunctions of 1D Schrödinger Operators”, **International Mathematics Research Notices**, Vol. 2008, Article ID: rnm148, 2008

Honors and Awards

- ◇ NSF grant DMS-0969745, 2010-2014
- ◇ Best paper prize in Applied Inverse Problems Conference from the Journal of Inverse Problems. Texas A&M University, May 2011
- ◇ William Kelso Morrill Teaching Award of excellence in the teaching of mathematics, Johns Hopkins University, 2008
- ◇ Gold medal in the Sixth Regional International Mathematics Olympiad, Iran 2001

Conference Talks

- ◇ AMS Session on Global Harmonic Analysis
Orlando, September 2017 (declined for family reasons)
- ◇ Symposium on Scattering and Spectral Theory
Florianópolis, Brazil, July 2017 (declined for family reasons)
- ◇ AMS Sectional Meeting
Washington State University, Pullman, April 2017
- ◇ Emerging Topics Working Group on Nodal Sets of Eigenfunctions
Institute for Advanced Study, Feb 2017
- ◇ Geometric and Spectral Methods in Partial Differential Equations
Banff International Research Station for Mathematical Innovation and Discovery (BIRS) and Casa Matemática Oaxaca (CMO), Oaxaca, Mexico, December 2016
- ◇ Probabilistic Methods in Spectral Geometry and PDE
University of Montreal, August 2016
- ◇ AMS Special Session on Global Harmonic Analysis
AMS Joint Mathematics Meetings, Seattle, January 2016
- ◇ Special Session on Geometric Spectral Theory, joint meeting of the American, European, and Portuguese mathematical societies
Porto, Portugal, June 2015 (declined for family reasons)
- ◇ Spectral and Analytic Inverse Problems, the IHP program on inverse problems
Institut Henri Poincaré (IHP), Paris, May 2015 (declined for family reasons)
- ◇ Workshop on Geometric Scattering Theory and Applications
Banff International Research Station for Mathematical Innovation and Discovery (BIRS), November 2014 (declined for visa reasons)
- ◇ 32nd Annual Western States Mathematical Physics Meeting
CalTech, February 2014
- ◇ Workshop on Inverse Problems and Geometry
Banff International Research Station for Mathematical Innovation and Discovery (BIRS), September 2013 (declined for visa reasons)
- ◇ Workshop in Spectral Invariants on Singular and Non-Compact Spaces
Centre de Recherche Mathématiques (CRM), Montreal, July 2012 (declined for visa reasons)
- ◇ Microlocal Methods in Spectral and Scattering Theory
Northwestern University, October 2011
- ◇ Applied Inverse Problems Conference
Texas A&M University, May 2011
- ◇ Inverse Problems: Theory and Applications
MSRI, November 2010
- ◇ AMS Special Session on Inverse Problems
San Francisco, January 2010
- ◇ AMS-AWM Special Session on Spectral Problems on Compact Riemannian Manifolds
San Francisco, January 2010
- ◇ Short talk in the Clay Math Summer School on Evolution Equations
ETH Zurich, July 2008
- ◇ Conference on Mathematical Aspects of Quantum Chaos
University of Montreal, June 2008
- ◇ AMS Special Session on Inverse Problems in Geometry
San Diego, January 2008

Seminar Talks

- ◇ UC San Diego, May 2017
- ◇ UC Riverside, May 2015
- ◇ Johns Hopkins University, March 2015
- ◇ Northwestern University, October 2014
- ◇ University of Arizona, December 2013
- ◇ Johns Hopkins University, January 2012
- ◇ Purdue University, January 2012
- ◇ George Washington University, January 2012
- ◇ Michigan State University, January 2012
- ◇ UC Irvine, January 2012
- ◇ MIT, October 2011
- ◇ Northeastern University, October 2011
- ◇ MIT, February 2011
- ◇ MSRI, November 2010
- ◇ University of California Berkeley, October 2010
- ◇ Northwestern University, April 2010
- ◇ University of Chicago, February 2010
- ◇ University of Washington, January 2010
- ◇ MIT, October 2009
- ◇ MIT, April 2009
- ◇ University of Chicago, October 2008
- ◇ Johns Hopkins University, September 2008
- ◇ University of Florida, March 2008
- ◇ Johns Hopkins University, Fall 2007
- ◇ Johns Hopkins University, Spring 2005

Other talks

- ◇ Talk for middle school students at MathCounts, March 2013
- ◇ Talk for high school students at OCMC (Orange County Math Circle), April 2014

Organizational Activities

- ◇ Co-organizer of the Nonlinear PDE Seminars, UC Irvine, Spring 2015-current
- ◇ Co-organizer of Minisymposium on Inverse Spectral Problems, Inverse Problems and Applications Conference, Texas A&M University, May 2011
- ◇ Organizer of the Postdoctoral and Graduate Student Seminars, MSRI, Fall 2010
- ◇ Co-organizer of the Complex Geometry Seminars, Johns Hopkins University, Spring 2008
- ◇ Organizer of the Slow Pitch Seminars, Johns Hopkins University, Fall and Spring 2005

Teaching Experience

- ◇ Assistant Professor at UC Irvine: Elementary Analysis (Spring 2017), Ordinary Differential Equations (Winter 2017), Multivariable Calculus (Fall 2016), Introduction to Partial Differential Equations (Fall 2016), Multivariable Calculus (Winter 2016), Topics course on Microlocal Analysis (Fall 2015), Introduction to Abstract Mathematics (Summer 2015), Multivariable Calculus (Summer 2015), Linear Algebra (Spring 2015), Harmonic Analysis (Winter 2015), Multivariable Calculus (Fall 2014), Introduction to Graduate Analysis ABC (Fall 2013, Winter 2014, Spring 2014), Dynamical Systems (Winter 2013), Complex Analysis and Applications (Fall 2012), Theory of Differential Equations (Fall 2012).
- ◇ Lecturer at MIT: Real Analysis (Fall 2011), Multivariable Calculus with Theory (Spring 2010)
- ◇ Recitation Instructor at MIT: Linear Algebra (Spring 2011), Differential Equations (Fall 2009)
- ◇ Lecturer at Johns Hopkins University: Introduction to Differentiable Manifolds (Winter 2009), Linear Algebra (Summer 2006), Putnam Training Class (Fall 2007, Fall 2008)
- ◇ Teaching Assistant at Johns Hopkins University: Honors Calculus I (Fall 2008), Analysis (Spring 2008) Differential Equations (Fall 2007), Analysis (Fall 2005), Calculus I (Fall 2005), Honors Calculus III (Spring 2005), Calculus I for Biology (Fall 2004)
- ◇ Teaching Assistant at Simon Fraser University, Canada: Calculus I (Fall 2003, Spring 2004), Number Theory (Summer 2004)
- ◇ Lecturer at Sharif University of Technology, Iran: Algebraic Geometry (Fall 2002)
- ◇ Teaching Assistant at Sharif University of Technology, Iran: Algebra I, II and III, Number Theory, Complex Analysis for Engineers