

## SOLEDAD BENGURIA

### Contact Information

University of Wisconsin - Madison  
Mathematics Department  
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### Employment

2016- Assistant Faculty Associate, University of Wisconsin–Madison  
2014-2016 Van Vleck Visiting Assistant Professor, University of Wisconsin–Madison

### Education

2008 - 2014 **Ph.D. in Mathematics**  
University of Wisconsin–Madison  
Advisor: Alexander Nagel  
Minor in French

2008 - 2010 **M.A. in Mathematics**  
University of Wisconsin–Madison

2004 - 2007 **Licenciatura en Matemáticas**  
Pontificia Universidad Católica de Chile

### Research Interests

Nonlinear Elliptic PDEs, Spectral Geometry, Several Complex Variables

### Publications

- *A non-existence result for a generalized radial Brézis-Nirenberg problem*, with R. D. Benguria, arXiv:1901.09958 (submitted).
- *An application of John ellipsoids to the Szegő kernel on unbounded convex domains*, Complex Var. Elliptic Equ. 62(3), 347–396 (2017).
- *The Brezis–Nirenberg Problem for the Laplacian with a singular drift on  $\mathbb{R}^n$  and  $\mathbb{S}^n$* , with R. D. Benguria, Nonlinear Analysis 157, 189–211 (2017).
- *An improved bound for the non-existence of radial solutions of the Brezis–Nirenberg problem in  $\mathbb{H}^n$* , with R.D. Benguria, Functional Analysis and Operator Theory for Quantum Physics. Pavel Exner Anniversary Volume (J. Dittrich, H. Kovarik, A. Laptev (Eds.): Europ. Math. Soc. Publ. House, 2017).
- *The solution gap of the Brezis–Nirenberg problem on the hyperbolic space*, Monatsh. Math. 181(3), 537–559 (2016).

- Thesis: *Estimates for the Szegő Kernel for a class of unbounded convex domains in  $\mathbb{C}^n$ .*

### Grants

- (2017-2019) EI Small Grant - Blended learning and consistent assessment in Math 171 and 217 (coPI with Uri Andrews).
- (2008-2012) “Beca de Doctorado por Gestión Propia”, Doctoral Grant, Conicyt, Chile.

### Awards

- (2018, 2016, 2015, 2013, 2008) University Housing’s Honored Instructor Award, University of Wisconsin–Madison.
- (2009-2010) Mathematics Graduate Teaching Award, Department of Mathematics, University of Wisconsin–Madison.
- (2009) “Premio de Excelencia Académica” (Valedictorian), Pontificia Universidad Católica de Chile.

### Teaching Experience

#### University of Wisconsin–Madison:

- Spring 2019: Math 222 - Calculus II and Math 234 - Calculus III.
- Fall 2018: Math 222 - Calculus II (REACH project pilot).
- Spring 2018: Math 221 - Calculus I.
- Spring 2017: Math 221 - Calculus I.
- Fall 2016: Math 221 - Calculus I.
- Spring 2016: Math 221 - Calculus I (REACH project pilot).
- Fall 2015: Math 221 - Calculus I.
- Spring 2015: Math 222 - Calculus II.
- Fall 2014: Math 319 - Ordinary Differential Equations.
- 2008-2014: TA for Calculus I, Calculus II, Calculus III, Business Calculus, Linear Algebra, College Algebra.
- International TA Training Program (Math department): Mentor - Summer 2012, Summer 2013.
- International TA Training Program (Campus-wide): Training video - Fall 2008-present.

## Talks and panels

- 2018 Education Outreach and Partnerships College-Readiness in Mathematics Symposium, invited panelist, November 2018.
- 2018 College of Letters and Sciences TA training, invited panelist, August 2018.
- 2017 UW–Madison Education Outreach and Partnerships Math Symposium, invited panelist, November 2017.
- REACH Recognition and Reception, *Successful innovations to course design and teaching practices highlights in Math 221*, invited panelist, September 2017.
- Cross-departmental REACH Symposium, Madison, April 2017: *A Window into Active Learning in Math 221*, introductory presentation and invited panelist.
- Collaboration for the Advancement of Learning Calculus–Second Annual Workshop, Minneapolis, October 2016: *The Reach project and active learning in Math 221–Calculus 1*.
- ESI workshop on Several Complex Variables and CR Geometry, Vienna, November 2015: *An application of John ellipsoids to the Szego kernel on unbounded convex domains*.
- BIRS workshop at CMO on Harmonic Analysis,  $\bar{\partial}$ , and CR Geometry, Oaxaca, October 2015: *An application of John ellipsoids to the Szego kernel on unbounded convex domains*.
- Analysis Seminar, University of Wisconsin-Madison, October 2015: *The Brezis-Nirenberg problem and critical dimensions*.
- AMS Central Fall Sectional Meeting, Special Session on Nonlinear PDEs and Calculus of Variations, Chicago, October 2015: *The Brezis-Nirenberg problem on  $\mathbb{S}^n$ , in spaces of fractional dimension*.
- 6th Symposium on Analysis and PDEs, Purdue University, June 2015: *The Brezis-Nirenberg problem on  $\mathbb{S}^n$ , in spaces of fractional dimension*.
- Third Annual Midwest Women in Mathematics Symposium, Chicago, March 2015: *The Brezis-Nirenberg problem on  $\mathbb{S}^n$ , in spaces of fractional dimension*.

## Workshops and Conferences Attended

- AMS Central Fall Sectional Meeting, Minneapolis, October 2016.
- Collaboration for the Advancement of Learning Calculus–Second Annual Workshop, October 2016.
- Midwest Several Complex Variables Conference, University of Toledo, May 2016.
- ESI workshop on several complex variables and CR geometry, Vienna, November 2015.
- IMA Special Workshop - Fifth Abel Conference: Celebrating the Mathematical Impact of John F. Nash Jr. and Louis Nirenberg, Minneapolis, November 2015.
- BIRS workshop at CMO on Harmonic Analysis,  $\bar{\partial}$ , and CR Geometry, Oaxaca, October 2015.
- AMS Central Fall Sectional Meeting, Chicago, October 2015.

- 6th Symposium on Analysis and PDEs, Purdue University, June 2015.
- Third Annual Midwest Women in Mathematics Symposium, Dominican University, March 2015.
- Harmonic Analysis and PDEs: Recent Developments and Future Directions, in honor of C.E. Kenig, University of Chicago, September 2014.
- Joint Mathematics Meeting, Baltimore, January 2014.
- IMA Workshop for Women in Analysis, Minneapolis, May 2012.
- MSRI Summer Graduate Workshop, The Dirichlet Space: Connections between Operator Theory, Function theory, and Complex Analysis, Berkeley, June 2011.
- International Conference on the Isoperimetric Problem of Queen Dido and its Mathematical Ramifications, Tunis, May 2010.

### **Service and Outreach**

- Panelist at the UW–Madison Education Outreach and Partnerships Math Symposium for High School teachers (2017 and 2018).
- Panelist at the College of Letters and Sciences TA training workshop, 2018.
- Panelist at REACH symposium, 2017..
- Speaker at the Madison Math Circle, 2014.