

Krishnan Shankar

318 Emelyn Street
Norman, OK 73071
krishnan.shankar@gmail.com
(405) 613-3438

EDUCATION

Bachelor of Arts, Mathematics (Phi Beta Kappa)
Reed College, Portland, OR 97202 May 1993

Ph.D, Mathematics
University of Maryland, College Park, MD 20742 May 1999

RESEARCH INTERESTS

Primary: Riemannian geometry: manifolds of non-negative sectional curvature; group actions; fundamental groups.

Secondary: Topological Data Analysis: dimension independent reach estimation.

EXPERIENCE

Professor of Mathematics 2011–current
University of Oklahoma, Norman, OK,

Associate Professor of Mathematics 2006–2011
University of Oklahoma, Norman, OK.

Assistant Professor of Mathematics 2002–2006
University of Oklahoma, Norman, OK.

T. H. Hildebrandt Research Assistant Professor 1999–2002
University of Michigan, Ann Arbor, MI.

Visiting Assistant Professor of Mathematics Summer 2001
University of Augsburg, Augsburg, Germany.

Visiting Professor of Mathematics Summer 2009, October 2015–March 2016
Universität Münster, Münster, Germany.

Visiting Professor of Mathematics Summer 2016, Summer 2017
Université Paris–Dauphine, Paris France.

SELECTED PUBLICATIONS

- *On the Fundamental Groups of Positively Curved Manifolds*, J. Differential Geom., **49** (1998), 179–182.
- *On the diffeomorphism type of the Berger space $SO(5)/SO(3)$* (joint with Nitu Kitchloo and Sebastian Goette), American J. of Mathematics, **126** (2) (2004), 395–416.
- *Spherical rank rigidity and Blaschke manifolds* (joint with Ralf Spatzier and Burkhard Wilking), Duke Math. J., **128**(1) (2005), 65–81.

- *On the cohomogeneity and symmetries of Eschenburg and Bazaikin spaces*, (joint with Karsten Grove and Wolfgang Ziller), *Asian J. of Math.*, 10(3), (S. S. Chern memorial volume, 2006), 647–662.
- *Conjugate points in length spaces*, (joint with Christina Sormani), *Advances in Math.*, **220** (3) (2009), 791–830.
- *Snowflake groups, Perron–Frobenius eigenvalues and isoperimetric spectra* (joint with Noel Brady, Martin Bridson and Max Forester), *Geometry & Topology*, **13** (2009), 141–187.
- *Riemannian submersions from simple compact Lie groups*, (joint with Martin Kerin), *Münster Journal of Math.*, **5** (2012), 25–40.
- *Positively curved manifolds with large spherical rank*, (joint with Ben Schmidt and Ralf Spatzier), *Commentarii, Math. Helv.*, **19**(2) (2016), 219–251.
- *Highly connected 7-manifolds and non-negative curvature*, (joint with Sebastian Goette and Martin Kerin), preprint: <https://arxiv.org/abs/1705.05895>

SELECTED HONORS & AWARDS

- Presidential Dream Course Award, University of Oklahoma, Spring 2015.
- O. U. Good Teaching Award, April 2014.
- National Science Foundation PI award (D.M.S. Award #1104352), 2011–2015.
- National Science Foundation PI award (D.M.S. Award #0513981), 2005–2008.
- National Science Foundation PI award (D.M.S. Award #0103993), 2001–2004.
- Irene Rothbaum Outstanding Assistant Professor award, annual award to the best assistant professor in the College of Arts & Sciences; University of Oklahoma, 2006.
- O. U. Faculty Member of the Game; Outstanding Service award, January 2005.
- Sokol Award for Best Postdoctoral Fellow in the Sciences, University of Michigan, 2001.

RECENT INVITED TALKS & CONFERENCES

- Invited talk, AMS Special Session on Non-negatively curved manifolds, Riverside, CA, November 2017.
- Department Colloquium, University of Notre Dame, South Bend IN, October 2016.
- Differential Geometry Oberseminar, University of Münster, Germany, May 2016.
- Invited participant, “*Global Riemannian geometry*”, University of Münster, Germany, 2009, 2011, 2013, 2015 (also gave a talk in 2015).
- Departmental Colloquium, Université Fribourg, Switzerland, December 2015.

SYNERGISTIC & OUTREACH ACTIVITIES

- **Course Administrator for WeBWork:** Applied for a grant from the OU IT committee (~ \$2,500) for a server to host WeBWork, an online homework system. Helped install and I am currently course administrator for the software in the department. The software has been operational since Fall 2012 and has been used by hundreds of students every semester.
- Organizer of University of Oklahoma Math Day, a recruitment drive to attract local high school students especially from low income rural areas. Approximately 75–100 students compete in tests and a quiz show and win prizes for several events; University of Oklahoma, 2002–2007; consultant, 2008–present.

- Directed undergraduate research every semester at the University of Oklahoma. Examples of projects: “An application of cryptography: Playing Blackjack over the phone.” (2003–04); “Continued fractions” (2006); “Benford’s Law” (2010); “RSA” (2012); “Coding Theory” (2016).
- Recent Expository talks:
 - *An introduction to random walks*, Graduate Student seminar, Fall 2017.
 - *Zero Knowledge Proofs*, Graduate Student seminar, Fall 2016.
 - *How does Bitcoin work?*, Graduate Student seminar, Spring 2015.

**DEPARTMENT
& UNIVERSITY
SERVICE**

- Chair, Computational/Applied Topology hiring committee, Fall 2017.
- Member, Arts & Sciences Big Data committee, 2017.
- Member, Oklahoma–Arkansas MAA conference organizing committee, Fall 2016–Spring 2017.
- Member, Provost’s Elite Retention Squad (ERS), Fall 2016–present.
- Outreach and engagement with local companies (Exaptive LLC), Fall 2017.

**PROFESSIONAL
SERVICE**

- Panel reviewer for National Science Foundation, 2006, 2012, 2013.
- Referee for *Inventiones Mathematicae*, *GAFA*, *Duke Mathematical Journal*, *Bulletin of the AMS*, *Journal of Differential Geometry*, *American Journal of Mathematics*, *Communications in Analysis and Geometry*.