

Mary Cook

CONTACT INFORMATION

School of Math. and Stat. Sciences
Arizona State University
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RESEARCH INTERESTS

Differential geometry, geometric analysis, Ricci flow

EDUCATION

Arizona State University

Ph.D. Candidate, Mathematics (expected May 2021)

- Advisor: Brett Kotschwar

Arizona State University

BS in Mathematics, May 2015

BMUS in Orchestral performance, May 2015

PUBLICATIONS

M. Cook and B. Kotschwar, *The full holonomy group under the Ricci flow*, Proc. Amer. Math. Soc. **148** (2020), no. 12, 5313–5321.

M. Cook, *A note on the preservation of product structures for Ricci flows with instantaneously bounded curvature*, preprint.

K. Cameron, M. Cook, B. Robinson, and J. Wells, *Fisher-Rao distances on the covariance cone*, [arXiv:2010.15861](https://arxiv.org/abs/2010.15861).

M. Cook, *Shrinking Ricci solitons asymptotic to products*, in preparation.

TALKS AND PRESENTATIONS

Some questions of uniqueness and preservation of structure for the Ricci flow, Analysis, Dynamics and Applications Seminar at the University of Arizona. (December 2020, online, upcoming)

Some questions of uniqueness and preservation of structure for the Ricci flow, Differential Geometry Seminar at Arizona State University. (November 2020, online)

The holonomy group under the Ricci flow, Geometry and Topology Seminar at University of Oklahoma. (April 2020, online)

The logarithmic fast diffusion equation on the plane, PDE Seminar at Arizona State University. (August 2018)

Instantaneously complete Ricci flow on surfaces, Differential Geometry Seminar at Arizona State University. (April 2018)

The Ricci flow on surfaces, Differential Geometry Seminar at Arizona State University. (October 2017)

TEACHING EXPERIENCE	Fall 2020	Instructor, Calculus for Engineers I (online)	
	Summer 2020	Senior Teaching Assistant, TA training (online)	
	Spring 2020	Teaching Assistant, Geometry and Topology II	
	Fall 2019	Instructor, Calculus for Engineers I	
	Summer 2019	Senior Teaching Assistant, TA training	
	Summer 2019	Instructor, Calculus for Engineers I	
	Fall 2018	Teaching Assistant, Differential Equations I	
	Spring 2018	Teaching Assistant, Geometry and Topology of Manifolds II	
	Fall 2017	Teaching Assistant, Geometry and Topology of Manifolds I	
	Spring 2016	Teaching Assistant, Calculus with Analytic Geometry II	
	Fall 2015	Teaching Assistant, Calculus with Analytic Geometry II	
	OUTREACH	2015–2017	Officer in ASU branch of Association for Women in Math Volunteered at public events such as Math Day, Night of the Open Door, and Homecoming
		2017–2018	Assisted in organizing graduate student seminar at ASU
SCIENTIFIC RESEARCH EXPERIENCE	Summer 2016/2017	Research regarding information geometry and possible applications to signal detection and estimation. Advisor: B. Robinson, ATRC Air Force Research Labs, Wright State University, Dayton, OH	
	Fall 2016 and Spring 2017	Research assistant continuing ATRC research, applications of information geometry to covariance estimation. Advisor: B. Robinson, ATRC and D. Cochran, ASU Air Force Research Labs, Wright State University, Dayton, OH	
CONFERENCES AND WORKSHOPS ATTENDED	May 2019	PIMS Workshop on Geometric Analysis University of British Columbia	
	Nov. 2018	Texas Geometry and Topology Conference Rice University	
	Jan. 2019	Southern California Geometric Analysis Conference University of California, San Diego	
	May 2018	Barrett Lectures University of Tennessee, Knoxville	
	Jan. 2018	Southern California Geometric Analysis Conference Winter School University of California, Irvine	