

Stephen E. McKeown

UT Dallas

Dept. of Mathematical Sciences, FO 35
800 West Campbell Road
Richardson, TX 75080-3021

Email: stephen.mckeown@utdallas.edu
Phone: (972) 883-4684

Research Interests

Differential geometry and geometric analysis; conformal geometry; analysis and geometry of cornered asymptotically hyperbolic manifolds; PDEs on spaces with corner singularities; spaces with multiple edge structures; interactions of these areas with mathematical physics.

Education

Ph.D., Mathematics, University of Washington, Seattle, WA (2016)
Dissertation: *Cornered Asymptotically Hyperbolic Metrics*
Supervisor: C. Robin Graham

M.S., Mathematics, University of Washington, Seattle, WA (2012)

J.D., Yale Law School, New Haven, CT (2010)

B.S., Mathematics and Physics *summa cum laude*, University of North Texas, Denton, TX (2007)
Senior thesis: "Maxwell's Demon: the Second Law and Information"
Supervisor: Donald Kobe

A.A., Mathematics and Natural Sciences, Tyler Junior College, Tyler, TX (2004)

Professional Experience

Assistant Professor of Mathematical Sciences, University of Texas at Dallas, Fall 2019 - Present.

Postdoctoral Research Associate and Lecturer, Princeton University, Fall 2016 - Summer 2019.

Teaching Assistant, University of Washington, Fall 2010 - Spring 2016.

Research assistant to Prof. William Cherry of UNT on a number theory project, Summer 2006.

Papers

(with Jeffrey Case, Tzu-Mo Kuo, Yueh-Ju Lin, Cheikh Ndiaye, Andrew Waldron, and Paul Yang) Conformal changes of the four-dimensional half-ball leading to constant Gauss-Bonnet mass on the corner. (In preparation)

(with Matthew J. Gursky and Aaron J. Tyrrell), "Renormalized volume of minimally bounded regions in asymptotically hyperbolic Einstein spaces," (to appear, *Advances in Theoretical and Mathematical Physics*), arXiv:2101.11755, pp. 1-39.

(with S.-Y. Alice Chang and Paul Yang) "Scattering on singular Yamabe spaces," *Revista Iberoamericana de Matemática* 38(7), 2153-2184 (2022)

"Extrinsic curvature and conformal Gauss-Bonnet for four-manifolds with corner," *Pacific Journal of Mathematics* 314(2), 411-424 (2021)

“Exponential map and normal form for cornered asymptotically hyperbolic metrics.” *Transactions of the American Mathematical Society* 372, 4391-4424 (2019)

“Formal theory of cornered asymptotically hyperbolic Einstein metrics.” *Journal of Geometric Analysis* 29(3), 1876-1928 (2019)

Organizational Activity

Organizing UT Dallas’s Geometry, Topology, and Dynamics seminar.

Co-organized special session, “Geometry of submanifolds”, AMS Central Sectional Meeting, El Paso, Texas, September 2022

Co-organized conference on “Conformal Geometry, Analysis, and Physics,” Seattle, June, 2022.

Co-organized Texas Geometry and Topology Conference, Dallas, February, 2022.

Co-organized and taught in the Princeton Summer School on Geometric Analysis, fall 2019.

Organized the special session “Analysis and PDEs in Geometry”, AMS Central Sectional Meeting, Denton, Texas, September 2017.

Honors

Microsoft Research Fellow, University of Washington, 2010-13.

Outstanding Undergraduate in Mathematics and Outstanding Senior Physics Major, UNT, 2006.