Ayush Khaitan

Department of Mathematics – Rutgers University, New Brunswick

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Research Interests

Conformal and CR geometry, Geometric analysis, Ricci flow, Combinatorics, LLMs and Mathematics.

Employment

Rutgers University, New Brunswick

Hill Assistant Professor   *2023–Present*

Education

Penn State University   **University Park, PA**

Ph.D., Mathematics   *2017–2023*

Thesis: The weighted ambient metric

Advisor: Jeffrey Case

Birla Institute of Technology and Science   **Pilani, India**

B.E., Mechanical Engineering   *2011–2015*

SJI International   **Singapore**

International Baccalaureate, Keppel Magus scholar from India   *2008–2010*

Publications

2022: **The weighted ambient metric** with Jeffrey S. Case, SIGMA **18** (2022), 086, 21 pages.
Journal Link

2022: **GJMS operators of smooth metric measure spaces** (submitted). arXiv link

2022: **Weighted renormalized volume coefficients**(submitted). arXiv link

2023: **Ambient metric for manifolds with density and the Ricci flow** (submitted)
arXiv link.

2024: **Computing renormalized curvature integrals on Poincaré-Einstein manifolds** with
Jeffrey Case, Yueh-Ju Lin, Aaron Tyrell and Wei Yuan (submitted). arXiv link.

Research activities

Principal Investigator: LLMs in Mathematics research group, Rutgers University. Research group
website. 2023–Present

Co-organizer: Complex geometry and Harmonic analysis seminar, Rutgers University. Seminar
website. 2024–Present

Co-organizer: Special session on recent developments in geometric analysis, AMS Eastern Sectional

Meeting 2024, Howard University, Washington D.C. [Meeting website](). April, 2024

Organizer: LLMs in Mathematics seminar, Rutgers University. 2024–Present

Teaching

Calculus I: Penn State University, Multiple semesters
Calculus II: Penn State University, Multiple semesters
Linear Algebra: Penn State University, One semester
Plane trigonometry: Penn State University, One semester
Linear algebra: Rutgers University, one semester
History of Mathematics: Rutgers University, one semester
Calculus for engineers: Rutgers University, one semester

Invited Talks

2022: Geometry, Topology and Dynamical Systems seminar, University of Texas at Dallas
2022: Geometry Luncheon seminar, Penn State University
2023: Geometric Analysis Seminar, Rutgers University
2023: Nonlinear Anlysis Seminar, Rutgers University
2023: Geometry, Topology and Dynamical Systems seminar, University of Texas at Dallas
2023: Geometry/Topology seminar, Stony Brook University
2024: Colloquium, Rutgers University, Newark

Awards

2008: Keppel Magus Scholarship ($40,000), IB Diploma in Singapore, one scholar from Calcutta, India
2009: Bronze medal, Singapore Math Olympiad
2017: Distinguished Graduate Fellowship, Penn State University, given to 10 incoming graduate students across all departments
2022: Pritchard Dissertation Fellowship, Penn State University, given to 2 graduating PhD students in the Mathematics department