Louis Yudowitz - Curriculum Vitae

Personal Information

Email: yudowitz@kth.se
Website: `lmyudowitz.github.io`
Nationality: United Kingdom/United States of America
Languages: English

Current Research Interests

Nonlinear partial differential equations, geometric flows (primarily Ricci flow), Einstein manifolds, minimal surfaces.

Education

2019-2023 **PhD in Mathematics** at Queen Mary University of London. Supervisor: Reto Buzano.

2018-2019 **Master of Advanced Study in Mathematics (MASt)** at the University of Warwick.

2015-2018 **BSc Mathematics and Computer Science** (First Class Honours) at King's College London.

Academic Employment

2023-Present **Postdoctoral Researcher**, KTH Royal Institute of Technology.

- Involved teaching responsibilities as well. See Teaching Experience section for more details.

2019-2023 **Teaching Assistant**, Queen Mary University of London.

- See Teaching Experience section for more details.

2018-2019 **Research Assistant at the University of San Francisco (Professor Riggs, School of Management)**

- Ran statistical analysis concerning various transportation scenarios.

- Now a full time collaborator but no longer employed by USF.

2017 **Research Assistant at the University of San Francisco (Professors Devlin and Uminsky, Department of Mathematics)**

- Investigated the use of spectral analysis methods and their benefits over ridge regression and lasso regression techniques.

Awards

May 2021 QMUL Postgraduate Research Day Best Talk (2nd): "Refined Compactness Theorems for Gradient Shrinking Ricci Solitons".

June 2021 QMUL Postgraduate Research Day Best Poster (1st): "Bubble Tree Convergence of Ricci Solitons".

2019-2023 Queen Mary University of London Faculty of Science and Engineering Research Studentship.

Publications and Preprints

Buzano, Reto; Yudowitz, Louis. *Bubble Tree Convergence and Local Diffeomorphism Finiteness for Gradient Ricci Shrinkers.* Math. Z. Vol. 304, No. 7 (2023).

Buzano, Reto; Yudowitz, Louis. *Gaussian Upper Bounds for the Heat Kernel on Evolving Manifolds.* J. London Math. Soc. https://doi.org/10.1112/jlms.12793

Works in Preparation

A Symbol Computation of Heat Invariants on a Riemannian Manifold (with S. Scott and E. Grieger).

Generic Uniqueness for Ricci Expanders Coming out of Cones.

Past Theses

Determinants of Elliptic Differential Operators. Final year undergraduate research project at King's College London. Supervisor: Professor Simon Scott.

Determinantal Point Processes. Master's research project at the University of Warwick. Supervisor: Dr. Roger Tribe.

Invited Talks

Oct. 2023 KTH Differential Geometry and General Relativity Seminar: "Semi-Continuity of the Morse Index for Ricci Shrinkers".

July 2023 Workshop on Einstein Spaces and Special Geometry, Institut Mittag-Leffler: "Bubble Tree Convergence of Shrinking Ricci Solitons".

May 2023 Ghent Methusalem Junior Seminar: "Bubble Tree Convergence of Shrinking Ricci Solitons".

Jan. 2023 KTH Differential Geometry and General Relativity Seminar: "Bubble Tree Convergence of Gradient Ricci Shrinking Solitons".

Nov. 2022 Brunel University Math and Statistics Colloquium: "Ricci Flow, the Poincaré Conjecture, and Bubbles".

Oct. 2022 KIT Geometric Analysis Seminar: "Bubble Tree Convergence of Gradient Ricci Shrinking Solitons".

Jan. 2022 KCL/UCL Junior Geometry Seminar: "Bubble Tree Convergence of Gradient Ricci Shrinking Solitons"

Nov. 2021 Queen Mary Internal Postgraduate Seminar (QuIPS): "Ricci Flow and the Poincaré Conjecture"

Contributed Talks

Oct. 2023 The Crazy World of Arthur L. Besse: A Workshop on Einstein Manifolds: "Bubble Tree Convergence of Shrinking Ricci Solitons".

Sept. 2022 9th Heidelberg Laureate Forum: "Bubble Tree Convergence and Diffeomorphism Finiteness of Gradient Ricci Shrinking Solitons"

Programming Skills

Languages known: Java, Mathematica, Python, R.

Teaching Experience

KTH Royal Institute of Technology:

Calculus in Several Variables, Fall Semester, 2023/2024: Substitute lecturer, ran exercise classes and seminars.

QMUL:

Tutorials for *Probability and Statistics I*, Fall Semester 2022/2023.

Tutorials for *Calculus II*, Spring Semester 2021/2022.

Tutorials for *Actuarial Mathematics I*, Fall Semester 2021/2022 and 2022/2023.

Tutorials for *Vectors and Matrices*, Spring Semester 2019/2020.

Outreach and Service

2022-2023 **Math Circle Head Tutor and Organizer**

- Participated in math circles and "math battles" as a tutor for students aged 11-18.
- Focused on developing problem solving skills and enjoyment of math by working through various sorts of problems (e.g. area, modular arithmetic, combinatorics).
- Organized and led a math circle at Queen Mary University of London during the 2022/2023 academic year.

2021-2023 **QMUL Undergraduate Seminar Organizer**

- Helped run and organize a seminar to expose Queen Mary undergraduate students with the following aims:
    1. Expose them to topics they might not see during their degree and allow them to give talks on their own mathematical interests.
    2. Give advice on further studies and jobs.
    3. Create a space where students can interact with the rest of the department in a more casual manner.
- Was officially recognized by the QMUL Math Department for enhancing undergraduate engagement.

2017-2018 **King's Factor Tutor at King's College London**

- Taught A-level students (Years 12 and 13), primarily from less advantaged backgrounds, and introduced them to higher level mathematical problems not normally seen during A-levels.
- Guided students through problems taken from past MAT and STEP papers.

2015-2023 **Private Tutor for UK (GCSE and A-level) and US (AP level) Students**

- Taught both groups and individuals in preparation for GCSE/A-level/AP exams.
- Subjects taught: Chemistry, Mathematics, Physics, Statistics.

Other

2023-Present Associate Fellow of Higher Education

2022-Present Member of the London Mathematical Society.

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