ZHONGKAI TAO

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RESEARCH INTERESTS

Microlocal analysis, spectral theory, dynamical systems, partial differential equations and harmonic analysis.

EDUCATION

University of California, Berkeley   *August 2020 - Present*
PhD candidate in Mathematics.
Advisor: Maciej Zworski.

Xi'an Jiaotong University   *September 2016 - July 2020*
Bachelor of Science in Mathematics.

RESEARCH PAPERS

1. The fractal uncertainty principle via Dolgopyat's method in higher dimensions, with Aidan Backus and James Leng: arXiv:2302.11708.

2. Spectral asymptotics for kinetic Brownian motion on Riemannian manifolds, with Qiuyu Ren; arXiv:2212.05394.

3. Localized initial data for Einstein equations, with Yuchen Mao; arXiv:2210.09437.

4. Spectral asymptotics for kinetic Brownian motion on locally symmetric spaces, with Qiuyu Ren; arXiv:2208.13111.

5. Flat trace estimates for Anosov flows, with Long Jin; arXiv:2204.02677.

6. Exact Control for Schrödinger Equation on Torus, Pure and Applied Mathematics 3(2021), 387-401.

7. 0-th Order Pseudo-differential Operator on the Circle, to appear in Proceedings of the AMS.

RESEARCH TALKS

- Spectral asymptotics for kinetic Brownian motion on locally symmetric spaces, Geometric Analysis and Number Theory Seminar, Universities of Aarhus, Bielefeld and Paderborn, October 2022.

- The magic of Schur complement formula, Harmonic Analysis and Differential Equations Seminar (HADES), UC Berkeley, September 2022.

- Observability for Schrodinger equation on the torus, Harmonic Analysis and Differential Equations Seminar (HADES), UC Berkeley, October 2021.

ORGANIZED SEMINARS

- Co-organized Harmonic Analysis and Differential Equations Seminar (HADES), UC Berkeley, Fall 2022 to present.

- Organized seminar in semiclassical analysis, UC Berkeley, Spring 2022.

TEACHING

- Fall 2021, Math 53 (Multivariable Calculus), UC Berkeley, teaching assistant.

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