Andrew Graven

Math PhD Student · Caltech

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Education

California Institute of Technology — *Pasadena, CA*

PhD Mathematics — *2021-Present*

- Advisor: Nikolai G. Makarov

Cornell University — *Ithaca, NY*

BA Mathematics, concentration in mathematics — *2017-2021*

- Summa cum laude
- Distinction in all subjects
- Research Advisor: John H. Hubbard

Professional Experience

Summers 2018-2020 **Caltech Summer Undergraduate Research Fellowship (SURF)**, California Institute of Technology, JPL

Publications

Published

Andrew J. Graven and John H. Hubbard. An Elementary Proof of Poincaré's Last Geometric Theorem. Pro Mathematica, Vol. 31, No. 62, Feb. 2021, pp. 61-93. (pdf)

Andrew J. Graven Alan H. Barr, and Martin W. Lo. AAS 21-222: A Rapid Method for Orbital Coverage Statistics With J_2 Using Ergodic Theory. AAS Space Flight Mechanics Meeting, 2021. (pdf)

Leo Huang, **Andrew J. Graven** and David Bindel. Density of States Graph Kernels. SIAM International Conference on Data Mining, April 2021. (pdf)

Andrew J. Graven and Martin W. Lo. AAS 19-681: The Long-Term Forecast of Station View Periods for Elliptical Orbits, Astrodynamics Specialist Conference, Portland, ME, Aug 2019. (pdf)

Under Preparation

Andrew J. Graven, Nikolai G. Makarov. Existence and Uniqueness of One Point Unbounded Quadrature Domains via the Faber Transform, 2024

Andrew J. Graven, Nikolai G. Makarov. Applications of the Faber Transform to Generalized Quadrature Domains, 2024

Andrew J. Graven. On the Coefficients of Conformal Mappings of Quadratic Julia Sets (expository)

Awards, Fellowships, & Grants

2021-2024 **DOD NDSEG Graduate Research Fellowship**, United States Department of Defense — *$ 42,200/yr*

Presentations

** presenting author*

Conference Presentations

Andrew J. Graven* May 2024. Generalized Quadrature Domains with connections to Hele-Shaw flow. Random Matrices and Related Topics in Jeju.

Andrew J. Graven*, Alan H. Barr, and Martin W. Lo. August 2021. A Rapid Method for Orbital Coverage Statistics With J_2 Using Ergodic Theory. AAS Space Flight Mechanics Meeting, Virtual.

Andrew J. Graven* and Martin W. Lo. August 2019. The Long-Term Forecast of Station View Periods for Elliptical Orbits. Astrodynamics Specialist Conference, Portland, ME.