

Travis Askham

Curriculum Vitae

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Education and Qualifications

2016 Ph.D. New York University
2010 M.A. University of California Los Angeles
2010 B.Sc. University of California Los Angeles

Professional Appointments

2016 – Research Associate of Applied Mathematics, Department of Applied Mathematics,
University of Washington

Publications

Journal Articles & Thesis

- [1] Travis Askham and Antoine J Cerfon, An adaptive fast multipole accelerated poisson solver for complex geometries. *Journal of Computational Physics*, 344:1–22, 2017.
- [2] Travis Askham and J Nathan Kutz, Variable projection methods for an optimized dynamic mode decomposition. *SIAM Applied Dynamical Systems*, 2017 (accepted).
- [3] Manas Rachh and Travis Askham, Integral equation formulation of the biharmonic dirichlet problem. *Journal of Scientific Computing*, 2017.
- [4] Travis Askham, *Integral-equation methods for inhomogeneous elliptic partial differential equations in complex geometry*. Ph.D. thesis, New York University, 2016.
- [5] Travis Askham and Leslie Greengard, Norm-preserving discretization of integral equations for elliptic PDEs with internal layers I: the one-dimensional case. *SIAM Review*, 56(4):625–641, 2014.

Preprints

- [1] Travis Askham, A stabilized separation of variables method for the modified biharmonic equation. *arXiv preprint arXiv:1710.05408*, 2017.
- [2] Travis Askham, Peng Zheng, Aleksandr Aravkin, and J Nathan Kutz, Robust and scalable methods for the dynamic mode decomposition. *arXiv preprint arXiv:1712.01883*, 2017.
- [3] Chang Sun, Travis Askham, and J Nathan Kutz, Stability and dynamics of microring combs: elliptic function solutions of the Lugiato-Lefever equation. *arXiv preprint arXiv:1712.00417*, 2017.

Honors & Awards

2016 Wilhelm Magnus Memorial Prize, Courant Institute of Mathematical Sciences
2010 Daus Award in Mathematics, University of California Los Angeles

Grants & Fellowships

2015 Dean's Dissertation Fellowship, New York University
2010–2015 Henry M. MacCracken Fellowship, New York University

Teaching Experience

University of Washington

Scientific Computing (**Instructor**, AMATH 481, 38 students)

Courant Institute of Mathematical Sciences

Numerical Methods I (Reader)

Analysis I (Teaching Assistant)

Ordinary Differential Equations (Teaching Assistant)

Research Experience

2012–2015 Research Assistant, Courant Institute of Mathematical Sciences, New York University. Principal Investigator: Leslie Greengard. Project: Novel methods for electromagnetic simulation and design

Conference Activity

Participation

- 2017 Talk. Robust and scalable methods for the dynamic mode decomposition, SIAM Pacific Northwest Regional Meeting. Corvallis, OR, USA
- 2017 Talk. A stabilized FMM for fluid flow, BIRS-CMO Workshop on Creeping Flows. Oaxaca, OAX, Mexico
- 2017 Talk. Variable projection for Generalizing the Dynamic Mode Decomposition, SIAM CSE. Atlanta, GA, USA
- 2017 Talk. An algorithm for the DMD with unevenly spaced time samples, BIRS Workshop on Data-Driven Methods. Banff, Alberta, Canada
- 2016 Talk. Integral-Equation Methods for Inhomogeneous Elliptic PDEs (and applications), SIAM Annual Conference. Boston, MA, USA
- 2014 Poster. Volume Integrals in Complex Geometry: A Case Study of Poisson's Equation, CBMS-NSF Conference: Fast-Direct Solvers for Elliptic PDEs, Dartmouth College. Hanover, NH, USA
- 2013 Poster. On the discretization of integral equations for divergence-form PDEs with internal layers, Integral Equations Methods: Fast Algorithms and Applications (BIRS Workshop), Banff International Research Station. Banff, Alberta, Canada
- 2013 Talk. On the discretization of integral equations for elliptic PDEs with internal layers, Mid-Atlantic Numerical Analysis Day, Temple University. Philadelphia, PA, USA

Organization

- 2018 Mini-symposium. Data-driven discovery for dynamical systems, SIAM UQ. Garden Grove, CA, USA
- 2017 Mini-symposium. Data-driven characterization, control, and uncertainty quantification of dynamical systems, SIAM CSE. Atlanta, GA, USA

Service to Profession

Referee

Journal of Computational Physics

Member

SIAM (since 2011)

Software

optdmd A MATLAB package for computing the optimized dynamic mode decomposition (available under the MIT license, github.com/duqbo/optdmd)

Skills

Coding

Mastery Fortran77, MATLAB

Proficiency C99/C++, L^AT_EX

Familiarity OpenMP, OpenCL (in C99), Python, Julia, PHP, HTML

Speaking & Reading

English (native)

Spanish (elementary proficiency)

Biographical

Born 1987. Walnut Creek, CA

Citizen United States