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 J Nathan Kutz, Variable projection methods for an optimized dynamic mode decomposition. *SIAM Journal on Applied Dynamical Systems*, 17(1):380–416, 2018.

[2] Manas Rachh and Travis Askham, Integral equation formulation of the biharmonic dirichlet problem. *Journal of Scientific Computing*, 75(2):762–781, 2018.

[3] Chang Sun, Travis Askham, and J Nathan Kutz, Stability and dynamics of microring combs: elliptic function solutions of the lugiato–lefever equation. *JOSA B*, 35(6):1341–1353, 2018.

[4] Travis Askham, A stabilized separation of variables method for the modified biharmonic equation. *Journal of Scientific Computing*, pages 1–24, 2017.

[5] Travis Askham and Antoine J Cerfon, An adaptive fast multipole accelerated poisson solver for complex geometries. *Journal of Computational Physics*, 344:1–22, 2017.

[6] Travis Askham, *Integral-equation methods for inhomogeneous elliptic partial differential equations in complex geometry*. Ph.D. thesis, New York University, 2016.

[7] 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] Emily Clark, Travis Askham, Steven L Brunton, and J Nathan Kutz, Greedy sensor placement with cost constraints. *arXiv preprint arXiv:1805.03717*, 2018.

[2] Peng Zheng, Travis Askham, Stephen L Brunton, J Nathan Kutz, and Aleksandr Y Aravkin, Sparse relaxed regularized regression: Sr3. *arXiv preprint arXiv:1807.05411*, 2018.

[3] 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.

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

Invited Speaking

Department Seminars

2018 A Fredholm operator approach to clamped plate problems, Simon Fraser University. Burnaby, BC, Canada
2018 Tailored low-rank matrix approximation: two stories, NJIT. Newark, NJ, USA

Conference Activity

Participation

2018 Talk. A stable, kernel dependent FMM for fluid flow, ICOSAHOM, London, Greater London, UK
2018 Talk. Robust and scalable methods for the dynamic mode decomposition, SIAM Uncertainty Quantification conference, Garden Grove, CA, USA
2018 Talk. Adaptive grids for embedded integral equation based solvers, ICERM Workshop on Point Configurations. Providence, RI, USA
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. High-Order Integral Equation Methods in Fluid Dynamics, ICOSAHOM. London, Greater London, UK
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
SIAM Scientific Computing
Advances in Computational Mathematics
Complexity

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)
`RobustDMD`	A julia package for fitting exponential functions to data with robust penalties (available under the MIT license, github.com/UW-AMO/RobustDMD.jl)

Skills

Coding

Mastery	Fortran (77-95), MATLAB
Proficiency	C99/C++, LaTeX, Python, julia
Familiarity	OpenMP, OpenCL (in C99), PHP, HTML

Speaking & Reading

English (native)
Spanish (elementary proficiency)

Biographical

Born	1987. Walnut Creek, CA, USA
Citizen	United States