Robert Baraldi

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Areas of specialization

Optimization • Inverse Problems • Nonsmooth • Nonconvex • Trust Regions • PDE-constrained •
Uncertainty Quantification

Education

In progress	PhD in Applied Mathematics, University of Washington. **PhD Advisor**: Aleksandr Aravkin.
2017	MSc in Applied Mathematics, University of Washington
2016	BS in Mathematics, NC State University. **Academic Advisor:** Alina Duca. **Research Advisor:** Harvey Thomas Banks.

Internship Experience

Graduate

2020	Argonne National Lab: DOE CSGF Practicum: ADMM and Filter Methods. **Advisor:** Sven Leyffer.
2018	Lawrence Berkeley National Lab: DOE CSGF Practicum: Reduced Order Models and Implicit Sampling. **Advisor:** Matthew Zahr.

Undergraduate

2013-2016	Student Researcher, Center for Research in Scientific Computation, NC State University. **Advisor:** Harvey Thomas Banks.
2015	Undergraduate Researcher, Cold Spring Harbor Labs. **Advisor:** Jesse Gillis.
2014, 2016	Summer Student Worker, Pfizer Inc. **Advisor:** Cynthia Musante, Theodore Rieger.

Grants, honors & awards

GRADUATE

2017	Department of Energy Computational Science Graduate Fellowship (DOE CSGF)
2017	National Science Foundation Graduate Research Fellowship (NSF-GFRP, declined)
2016	Department of Applied Math Boeing Fellowship/Top Scholar Award, UW

UNDERGRADUATE

2014	Mathematical Honors Program
2013	Business and Finance Scholarship
2012	University Honors Program
2012	Goodnight Scholarship
2012	SECU Foundation Scholarship
2012-2016	Dean's List

Teaching

2016	Teaching Assistant: MATH 126 Calculus 3, University of Washington
2013	Mathematics Tutor: MA 121 Calculus 1, MA 241 Calculus 2, NC State University

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Coding Languages

Current	Matlab, Python, Julia, C++
Past	Java, R, PyTorch, Markdown, HTML, OpenMP/MPI
Repos	UW-AMO Group, Personal

Publications & talks

JOURNAL ARTICLES

2019	Robert Baraldi, Rajiv Kumar, Aleksandr Aravkin (2019), "Basis Pursuit Denoise with Nonsmooth Constraints", *IEEE Transactions on Signal Processing* 67(22): 5811-5823.
2019	Robert Baraldi, Carl Ulberg, Rajiv Kumar, Kenneth Creager, Aleksandr Aravkin (2019), "Relaxation Algorithms for matrix completion, with applications to seismic travel-time data interpolation", *Inverse Problems* 35(10):105009.
2016a	Harvey Thomas Banks, Robert Baraldi, Jared Catenacci, Nicholas Myers (2016), "Parameter Estimation Using Unidentified Individual Data in Individual Based Models". *Mathematical Modeling of Natural Phenomena* 11(6):103-121.
2016b	Harvey Thomas Banks, Robert Baraldi, Kevin Flores, Michael Stemkovski (2016), "Validation of a Mathematical Model for Green Algae (*Raphidocelis subcapitata*) Growth and Implications for a Coupled Dynamical System with *Daphnia Magna*", *Applied Sciences* 6(5): 155.
2015a	Kaska Adoteye, Harvey Thomas Banks, Robert Baraldi, John Nardini, W Clay Thompson (2015), "Correlation of Parameter Estimators for Models Admitting Multiple Parametrizations", *International Journal of Pure and Applied Mathematics* 105(3): 497-522.

2015b   Harvey Thomas Banks, Robert Baraldi, Kevin Flores (2015), "Optimal Design for Minimizing Uncertainty in Dynamic Equilibrium Systems", *Eurasian Journal of Mathematical and Computer Applications* 3: 20-43.

2015c   Harvey Thomas Banks, Robert Baraldi, Karissa Cross, Christina McChesney, Laura Poag, Emma Thorpe, Kevin Flores (2015), "Uncertainty quantification in modeling HIV viral mechanics.", *Mathematical Biosciences and Engineering* 12(5): 937-964

Conference Proceedings

2014   Robert Baraldi, Karissa Cross, Christina McChesney, Laura Poag, Emma Thorpe, Kevin Flores, Harvey Thomas Banks (2014) Uncertainty quantification for a model of HIV-1 patient response to antiretroviral therapy interruptions. *Proceedings of the 2014 American Control Conference*, 2753-2758

Conference Presentations

2016   "Systems Modeling and Data Assimilation in Drug Development", SIAM Annual Life Sciences Conference, Boston, MA, July 11-15, 2016.

Technical Reports

2014   Robert Baraldi, John Nardini, Emma Thorpe, and Harvey Thomas Banks (2014) The Effects of Parameterization on Inverse Problems, CRSC Technical report CRSC-TR14-07, Raleigh, NC.

2013   Robert Baraldi, Karissa Cross, Christina McChesney, Laura Poag, Emma Thorpe, Kevin Flores, and Harvey Thomas Banks (2013) "Mathematical Modeling of HCV Viral Kinetics". CRSC Technical report CRSC-TR13-07, Raleigh, NC.