Robert Baraldi

University of Washington Department of Applied Mathematics

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Areas of specialization

 $\begin{tabular}{ll} Optimization \bullet Inverse \ Problems \bullet Nonsmooth \bullet Nonconvex \bullet Trust \ Regions \bullet PDE-constrained \bullet Uncertainty Quantification \end{tabular}$

Education

In progress 2017

2016

РнD in Applied Mathematics, University of Washington. PhD Advisor: Aleksandr Aravkin.

MSc in Applied Mathematics, University of Washington

BS in Mathematics, NC State University. Academic Advisor: Alina Duca. Research Advisor:

Harvey Thomas Banks.

Research Experience

GRADUATE

2018-

Lawrence Berkeley National DOE CSGF Lab Practicum: Reduced Order Models and Implicit Sampling

2017-2018

Basis Pursuit Denoise with Nonsmooth Constraints

2016-2018

Relaxation Algorithms for Matrix Completion, with Applications to Seismic Travel-time Data In-

terpolation.

Undergraduate

2013-2016 2015 Student Researcher, Center for Research in Scientific Computation, NC State University Undergraduate Researcher, Cold Spring Harbor Labs

Summer Student Worker, Pfizer Inc.

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Grants, honors $\mathring{\sigma}$ awards

2015C

	Graduate
2017 2017 2016	Department of Energy Computational Science Graduate Fellowship (DOE CSGF) National Science Foundation Graduate Research Fellowship (NSF-GFRP, declined) Department of Applied Math Boeing Fellowship/Top Scholar Award, UW
	Undergraduate
2014 2013 2012 2012 2012 2012 2012-2016	Mathematical Honors Program Business and Finance Scholarship University Honors Program Goodnight Scholarship SECU Foundation Scholarship Dean's List
	Teaching
2016 2013	Teaching Assistant: MATH 126 Calculus 3, University of Washington Mathematics Tutor: MA 121 Calculus 1, MA 241 Calculus 2, NC State University
	Publications & talks
	Journal articles
2018	Robert Baraldi, Rajiv Kumar, Aleksandr Aravkin (2018), "Basis Pursuit Denoise with Nonsmooth
2018a	Constraints", <i>IEEE Signal Processing</i> (under revision - preprint available) Robert Baraldi, Carl Ulberg, Rajiv Kumar, Kenneth Creager, Aleksandr Aravkin (2018), "Relaxation Algorithms for matrix completion, with applications to seismic travel-time data interpolation", <i>Inverse Problems</i> (to appear late 2019 - preprint available).
2016a	Harvey Thomas Banks, Robert Baraldi, Jared Catenacci, Nicholas Myers (2016), "Parameter Estimation Using Unidentified Individual Data in Individual Based Models". <i>Mathematical Modeling of</i>
2016b	Natural Phenomena 11(6):103-121. 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
2015a	Coupled Dynamical System with <i>Daphnia Magna</i> ", <i>Applied Sciences</i> 6(5): 155. Kaska Adoteye, Harvey Thomas Banks, Robert Baraldi, John Nardini, W Clay Thompson (2015), "Correlation of Parameter Estimators for Models Admitting Multiple Parametrizations", <i>International Toward of Parameter Applied Mathematics</i> 22(2), 127, 228
2015b	tional Journal of Pure and Applied Mathematics 105(3): 497-522. Harvey Thomas Banks, Robert Baraldi, Kevin Flores (2015), "Optimal Design for Minimizing Uncertainty in Dynamic Equilibrium Systems", Eurasian Journal of Mathematical and Computer Applications 2: 20-42.
	plications 3: 20-43.

Harvey Thomas Banks, Robert Baraldi, Karissa Cross, Christina McChesney, Laura Poag, Emma Thorpe, Kevin Flores (2015), "Uncertainty quantification in modeling HIV viral mechanics.", *Math-*

ematical Biosciences and Engineering 12(5): 937-964

Conference Proceedings

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

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

TECHNICAL REPORTS

- 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.
- 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.