

# 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. <b>PhD Advisor:</b> <a href="#">Aleksandr Aravkin</a> .
2017	MSc in Applied Mathematics, University of Washington
2016	BS in Mathematics, NC State University. <b>Academic Advisor:</b> Alina Duca. <b>Research Advisor:</b> <a href="#">Harvey Thomas Banks</a> .

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## Internship Experience

### GRADUATE

2018	Lawrence Berkeley National DOE CSGF Lab Practicum: Reduced Order Models and Implicit Sampling. <b>Advisor:</b> <a href="#">Matthew Zahr</a> .
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### UNDERGRADUATE

2013-2016	Student Researcher, Center for Research in Scientific Computation, NC State University. <b>Advisor:</b> <a href="#">Harvey Thomas Banks</a> .
2015	Undergraduate Researcher, Cold Spring Harbor Labs. <b>Advisor:</b> <a href="#">Jesse Gillis</a> .
2014, 2016	Summer Student Worker, Pfizer Inc. <b>Advisor:</b> Cynthia Musante, Theodore Rieger.

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## 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

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## 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	<a href="#">UW-AMO Group</a> , <a href="#">Personal</a>

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## Publications & talks

### JOURNAL ARTICLES

2019	Robert Baraldi, Rajiv Kumar, Aleksandr Aravkin (2018), "Basis Pursuit Denoise with Nonsmooth Constraints", <i>IEEE Transactions on Signal Processing</i> (under revision - preprint <a href="#">available</a> )
2018a	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 <a href="#">available</a> ).
2016a	Harvey Thomas Banks, Robert Baraldi, Jared Catenacci, Nicholas Myers (2016), " <a href="#">Parameter Estimation Using Unidentified Individual Data in Individual Based Models</a> ". <i>Mathematical Modeling of Natural Phenomena</i> 11(6):103-121.
2016b	Harvey Thomas Banks, Robert Baraldi, Kevin Flores, Michael Stemkovski (2016), " <a href="#">Validation of a Mathematical Model for Green Algae (<i>Raphidocelis subcapitata</i>) Growth and Implications for a Coupled Dynamical System with <i>Daphnia Magna</i></a> ", <i>Applied Sciences</i> 6(5): 155.
2015a	Kaska Adoteye, Harvey Thomas Banks, Robert Baraldi, John Nardini, W Clay Thompson (2015), " <a href="#">Correlation of Parameter Estimators for Models Admitting Multiple Parametrizations</a> ", <i>International Journal of Pure and Applied Mathematics</i> 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.