

# Samuel Rudy

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## Education

- **University of Washington** Seattle, WA  
*M.S. Applied Mathematics* 2015  
*Ph.D. Candidate in Applied Mathematics* Expected June 2019
  - Advisers: J. Nathan Kutz and Steven L. Brunton
- **Washington University in St. Louis** St. Louis, MO  
*B.A. Mathematics and Physics, Summa Cum Laude* 2014
  - Thesis: An Alternative Graph Theoretic Proof of the Amitsur-Levitski Identity
  - Budapest Semesters in Mathematics, Summer 2013

## Work Experience

- **HERE Technologies** Seattle, WA  
*Data Science Intern* June 2017-September 2017
  - Developed scalable machine learning methods to augment HERE maps
  - Focused on computer vision, deep learning, and cartographic generalization

## Journal Articles

1. **Rudy, S.**, Kutz, J., Brunton, S. “Deep learning of dynamics and signal-noise decomposition with time-stepping constraints.” 2018. Preprint.
2. **Rudy, S.**, Alla, A., Brunton, S., Kutz, J. “Data-driven identification of parametric partial differential equations.” 2018. Preprint.
3. **Rudy, S.**, Brunton, S. Proctor, J., Kutz, J. “Data-driven Discovery of Partial Differential Equations.” *Science Advances*. April 2017.
4. **Rudy, S.**, Maia P, Kutz J. “Cognitive and behavioral deficits arising from neurodegeneration and traumatic brain injury: a model for the underlying role of focal axonal swellings in neuronal networks with plasticity.” *Journal of Systems and Integrative Neuroscience*. 2016

## Conference Proceedings

1. J.N. Kutz, **S. Rudy**, A. Alla, S. Brunton “Data-driven discovery of governing physical laws and their parametric dependencies in engineering, physics and biology.” *Conference Proceedings CAMSAP 2017*.

## Talks and Presentations

1. Data-driven discovery of partial differential equations 2017  
Banff International Research Station for Mathematical Innovation and Discovery
2. Data-driven discovery of partial differential equations 2016  
American Physical Society Division of Fluid Dynamics Conference
3. An Alternative Graph Theoretic Proof of the Amitsur-Levitski Identity 2014  
Honors thesis presentation in mathematics at Washington University
4. Timing Synchronization & Data Analysis for Gamma Ray Detecting Telescope Arrays 2012  
Presentation for undergraduate research in experimental astrophysics.

## Skills

**Languages:** Python. Some experience with Julia, R, C, C++

**Software:** scikit-learn, AWS, TensorFlow, Keras, Matlab, Mathematica, Latex, Hadoop, Git, OpenCV

## Teaching

*Washington University in St. Louis*

Grader, Mathematics 310; Foundations for High Mathematics

*Fall 2013*

*University of Washington*

Teaching Assistant, Mathematics 125; Calculus With Analytic Geometry II

*Fall 2014*

Teaching Assistant, Mathematics 126; Calculus With Analytic Geometry III

*Winter, Fall 2015*

Teaching Assistant, Mathematics 111; Algebra with Applications

*Fall 2016*

Teaching Assistant, Applied Math 563; Inferring Structure of Complex Systems

*Spring 2018*

Instructor, Applied Math 383; Introduction to Continuous Mathematical Modeling

*Summer 2018*

## Service

Reviewer for *Journal of Computational Physics*, *SIAM Journal on Applied Mathematics*, *Mathematical Geosciences*

Homework Help Volunteer at Seattle Public Libraries, 2015-Current

## Awards

NSF GRFP Honorable Mention

*2016*

University of Washington Top Scholars Fellowship

*2015*

Elected to Sigma Pi Sigma (Physics Honor Society)

*2014*

Elected to Phi Beta Kappa

*2014*

Ross Middlemiss Award in Mathematics, Washington University

*2014*

High Honors, Budapest Semesters in Mathematics

*2013*

Washington University Physics Summer Research Fellowship

*2012*