

## John Darges

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CONTACT INFORMATION	Emory University Department of Mathematics Language & Computer Labs 202 Raleigh, NC 27607 USA	<i>Email:</i> JDARGES@emory.edu <i>GitHub:</i> <a href="https://github.com/jedarges">github.com/jedarges</a> <i>Website:</i> <a href="https://jedarges.github.io">jedarges.github.io</a>
CITIZENSHIP	US Citizen	
INTERESTS	<b>General:</b>  Scientific computing; inverse problems; uncertainty quantification; machine learning  <b>Specific:</b>  Sensitivity analysis; surrogate-based methods for uncertainty quantification; Bayesian inverse problems; importance sampling; approximation of high-dimensional models; randomized matrix methods	
EDUCATION	<b>North Carolina State University, Raleigh, NC, USA</b>  Ph.D., Mathematics, 2024 Dissertation title: <i>Sensitivity Analysis in Forward and Inverse Problems</i> <i>Co-advisors: Alen Alexanderian and Pierre A. Gremaud</i> <i>Committee members: Ralph C. Smith and Xu Wu</i>  M.S., Mathematics, 2020  <b>University of North Carolina, Chapel Hill, NC, USA</b>  B.S., Mathematics, 2017  B.A., Chemistry, 2017	
EMPLOYMENT	<b>Department of Mathematics, Emory University, Atlanta, GA, USA</b>  <i>Postdoctoral Fellow</i> <span style="float: right;"><b>Fall 2024 to Present</b></span>  <b>Department of Mathematics, North Carolina State University, Raleigh, NC, USA</b>  <i>Research Assistant</i> <span style="float: right;"><b>Spring 2021 to Spring 2024</b></span>  <b>Avioq, Inc., Durham, NC, USA</b>  <i>Contractor</i> <span style="float: right;"><b>February 2018 to August 2018</b></span>  <b>Department of Chemistry, University of North Carolina, Chapel Hill, NC, USA</b>  <i>Undergraduate Researcher</i> <span style="float: right;"><b>August 2014 to May 2016</b></span>  <i>Lab Technician</i> <span style="float: right;"><b>August 2013 to May 2014</b></span>	
TEACHING	<b>Department of Mathematics, Emory University, Atlanta, GA, USA</b>  <i>Instructor: Math 211 (Multivariable Calculus)</i> <span style="float: right;"><b>Fall 2024</b></span>  <b>North Carolina Governor's School, Raleigh, NC, USA</b>  <i>Instructor: Area I Mathematics (Game Theory)</i> <span style="float: right;"><b>Summer 2024</b></span>	

**Department of Mathematics, North Carolina State University, Raleigh, NC, USA**

*Instructor: MA 511 (Advanced Calculus I)* **Fall 2020**

*Instructor: MA 241 (Calculus II)* **Summer 2020**

*Teaching Assistant: MA 131 (Calculus for Life and Management Sciences A)* **Spring 2020**

*Teaching Assistant: MA 241 (Calculus II)* **Fall 2019**

**Department of Chemistry, University of North Carolina, Chapel Hill, NC, USA**

*Teaching Assistant: CHEM 101L (Introductory Chemistry Lab I)* **May 2016 to June 2016**

**PUBLICATIONS**

*Variance-based sensitivity of Bayesian inverse problems to the prior distribution.* John Darges, Alen Alexanderian, Pierre A. Gremaud. *International Journal for Uncertainty Quantification* 2024.

*Extreme learning machines for variance-based global sensitivity analysis.* John Darges, Alen Alexanderian, Pierre A. Gremaud. *International Journal for Uncertainty Quantification* 2024.

*Band Gap Engineering in a 2D Material for Solar-to-Chemical Energy Conversion.* Jun Hu, Zhenkun Guo, Peter E. McWilliams, John E. Darges, Daniel L. Druffel, Andrew M. Moran, Scott C. Warren. *Nano Letters*. 2016

**PRESENTATIONS**

**Seminar Talk**

Sensitivity Analysis in Forward and Inverse Problems. Emory University, Atlanta, GA, USA. Numerical Analysis and Scientific Computing Seminar. April 2024.

**Seminar Talk**

Randomized function approximation. North Carolina State University, Raleigh, NC, USA. Applied Mathematics Graduate Student Seminar. November 2023.

**Seminar Talk**

Variance-based sensitivity of Bayesian inverse problems to the prior distribution. North Carolina State University, Raleigh, NC, USA. Research Training Group Seminar. October 2023.

**Seminar Talk**

Identifying important prior hyperparameters in Bayesian inverse problems with efficient variance-based global sensitivity analysis. North Carolina State University, Raleigh, NC, USA. Applied Mathematics Graduate Student Seminar. April 2023.

**Poster Talk**

Extreme learning machines for variance-based global sensitivity analysis. RAI Amsterdam Convention Center, Amsterdam, Netherlands. SIAM Conference on Computational Science and Engineering. March 2023.

**Invited Talk**

Extreme learning machines for variance-based global sensitivity analysis. Walter E. Washington Convention Center, Washington, D.C., USA. Joint Statistical Meetings. August 2022.

**Poster Talk**

Extreme learning machines for variance-based global sensitivity analysis. Florida State University, Tallahassee, FL, USA. Conference on Sensitivity Analysis of Model Output (SAMO). March 2022.

**SERVICE  
ACTIVITIES****North Carolina Science Olympiad 2023-Present**

Member of volunteer team running and scoring competition events

**Association of Women in Mathematics 2022-Present**

Volunteered at fundraising events and educational workshops to encourage and foster young women's interest in mathematical sciences

**Math Doesn't Bug Me 2019**

Volunteered at mathematics outreach events by helping participants solve mathematics-related games and puzzles and explaining the mathematics involved

**Alpha Chi Sigma 2015 to 2017**

Volunteered at science outreach events by demonstrating and helping participants conduct chemistry experiments. Provided tutoring services to primary school students

**Centro Para Familias Hispanas 2012 to 2013**

Tutored students in elementary school level mathematics, science, and language arts

**MEMBERSHIPS**

Society for Industrial and Applied Mathematics (SIAM), American Mathematical Society (AMS), American Statistical Association (ASA)

**SKILLS**

Python, MATLAB, LaTeX, Git

**LANGUAGES**

English, Spanish