

# Arun Bharadwaj Suresh

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## EDUCATION

University of Missouri

PhD in Mathematics

Georgia State University

Dual B.S. + M.S. in Mathematics

Columbia, Missouri, USA

Aug 2021 - Present

Atlanta, Georgia, USA

Aug 2016 - May 2021

## SKILLS

**Non-technical:** Critical thinking, Problem solving, Organization, Public speaking

**Technical (Math/Stat):** Mathematical analysis, Numerical analysis, Regression analysis, Mathematical modelling.

**Certificates:** [Google Data Analytics Certificate](#), [Advanced Learning Algorithms](#)

**Programming Languages:** Python, R, SQL, Julia, C++

**Libraries and Tools:** *Python:* Numpy, Pandas, Tensorflow, PyTorch. *R:* Tidyverse, Dplyr, Ggplot2. *Julia:* Flux, Plots.

*Spreadsheets:* Microsoft Excel, Google Sheets. *Reports:*  $\text{\LaTeX}$ , (R, Julia, regular-)Markdown, Microsoft word, Google docs.

*Presentations:* Tableau, Microsoft PowerPoint, Google Slides, Prezi.

## WORK EXPERIENCE

### Graduate Research Assistant

University of Missouri, MO, USA

Jun 2023 - Aug 2023

- **Main project:** *The generic crystallographic phase retrieval problem*, **Mentor:** Dr. Dan Edidin
- Derived tight sparsity bounds for signal recovery from phaseless measurements, with signals given in a generic (wavelet) basis. Project motivated by applications to X-ray crystallography
- Collaborated on a second project titled *Phase retrieval with semi-algebraic and ReLU neural network priors*.
- Assisted with a proof concerning the recovery of signals from their phaseless measurements, given that the measurements are obtained as an output of neural network equipped with a semi-algebraic activation function.

### University assistant

Georgia State University, Georgia, USA

May 2019 - Jul 2020

- **Project:** The generators, relations and type of the Backelin semigroup, **Mentor:** Dr. Florian Enescu
- Supported by the Georgia State Honors College to conduct research in pure mathematics
- The results of the project was accepted for publication in the Journal *Communications in Algebra*

## PROJECTS, PRESENTATIONS AND PORTFOLIO

- **Harvest the sun! Optimizing solar practicality across mainland US**, The capstone project requirement for the *Google Data Analytics certification*. Used Google data from Project Sunroof to create track-able indices that predict state/zip wide cost-impact-economic practicality of installing solar panels to the median household [Read More!](#)
- **Compressed Sensing using proximal gradient methods and wavelet transforms**, End of semester project done as a part of the numerical analysis reading group at Georgia State University, led by Dr. Xiaojing Ye. [Report](#)
- **Numeripy**, Python numerical methods package featuring a robust selection of numerical ODE-solvers, matrix factorization and numerical linear algebraic methods. [GitHub](#)

## PUBLICATIONS

- [Submitted] Tamir Bendory, Nadav Dym, Dan Edidin, **Arun Suresh**. 2023. Phase retrieval with semi-algebraic and ReLU neural network priors. *SIAM journal on mathematics of data science* [arXiv](#)
- [Submitted] Dan Edidin, **Arun Suresh**. 2023. The generic crystallographic phase retrieval problem. *Journal of Applied and Computational Harmonic Analysis*. [arXiv](#)
- Florian Enescu, **Arun Suresh**. 2023. The generators relations and type of the Backelin semigroup. *Communications in Algebra*. [T&F](#)

## EXTRACURRICULAR ACTIVITIES AND ACADEMIC ACHIEVEMENTS

- **Founder, Mentor:** University of Missouri, [Directed Readings Program](#). Feb 2023 - Present
- **Founder, Coordinator:** Continuum group at Georgia State University. Sep 2018 - May 2021
- **Awards:** Huckaba Scholarship in Algebra (MU), Excellence in graduate teaching (MU), Excellence in qualifying exams (MU, for both Analysis and Algebra), V.V. Lavroff Award for exceptional graduate student achievements (GSU), V.V. Lavroff Award for exceptional undergraduate student achievements (GSU), Kirkland Sattlemeyer scholarship (GSU Honors College), Campus Atlanta Scholarship (GSU).
- [Here's an exhaustive list of my conference talks, posters and other activities](#)
- [Here's an exhaustive list of my tutoring and graduate teaching experience](#)