

# Chris Gerlach

Lansing, Michigan  
Bay Area, California  
(510) 409-1639

[github.com/ChrisG32123](https://github.com/ChrisG32123)  
[www.linkedin.com/in/chris-m-gerlach](https://www.linkedin.com/in/chris-m-gerlach)  
[www.researchgate.net/profile/Chris-Gerlach-2](https://www.researchgate.net/profile/Chris-Gerlach-2)

[chrisg.32123@gmail.com](mailto:chrisg.32123@gmail.com)

Experienced researcher and educator specializing in computational mathematics, plasma simulations, and interdisciplinary math curriculum design. A strong foundation in applied mathematics and machine learning techniques, combined with hands-on teaching experience at middle and high school levels.

## Areas of Interest

- Python, Scikit-Learn, TensorFlow, Numpy, Pandas, Scipy, Matplotlib, Seaborn
- C++, MPI, OpenMP
- MATLAB, R, CUDA, LaTeX
- Fluent in Spanish
- Machine Learning, High-dimensional Data Compression, Plasma Simulations
- Curriculum Design, Project-based Learning, Interdisciplinary Labs

## Work Experience

2023 – Present

Michigan State University  
PhD Research Assistant

### High Dimensional Data Compression of Plasmas Simulations

- Analyzed algorithms of low rank tensor network approximations.
- Delivered weekly presentations to colleagues, effectively communicating research concepts.

2023

Simons Laufer Mathematical Sciences Institute (SLMath/MSRI)  
Graduate Research Assistant

### Mathematics & Computer Science of Market & Mechanism Design

- Collaborated on generalizing economic models to optimize auction designs.

2021 – 2023

San Jose State University  
Graduate Research Assistant

### Plasma Dynamics & Nonequilibrium Statistical Mechanics

- Developed novel multiscale hydrodynamic models for strongly-coupled plasmas.
- Applied wavelet transformations and spatio-temporal analysis to data.

2021 – 2023

Tessellations School  
Math Specialist

- Developed project-based Geometry through Calculus curricula for middle school.
- Led the vertical alignment of math courses across grades, fostering differentiation and scaffolding.
- Mentored students to achieve national competition success in math.

## Education

2023 – Present	PhD in Computational Mathematics, Science, & Engineering, Michigan State University, East Lansing, MI
2021 – 2023	MS in Applied Mathematics, San Jose State University, San Jose, CA
2018 – 2021	BA in Mathematics, San Jose State University, San Jose, CA

## Certifications

May 2024	IBM Data Science Professional Certificate Coursera
May 2024	IBM Machine Learning Certificate Coursera
September 2023	DeepLearning.AI TensorFlow Developer Certificate Coursera

## Conference Presentations

Oct. 2023	65th Annual Meeting of the APS Division of Plasma Physics Speaker
May 2023	50th IEEE International Conference of Plasma Science Speaker
Oct. 2022	64th Annual Meeting of the APS Division of Plasma Physics Speaker
May 2022	49th IEEE International Conference of Plasma Science Invited Speaker