

COLIN ROBERTS

Fort Collins, CO

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PROFESSIONAL SUMMARY

Mathematical physicist with a diverse background interested in utilizing geometric, topological, algebraic, and analytic tools to build novel computational methods for models that incorporate real world data. I am always willing to explore new content and improve my technical skills, as well as my collaborative abilities in order to solve challenging problems. Outside of my professional experience, I am an avid hiker and mountain biker and I aspire to be a better chef, baker, and equity trader.

TECHNICAL SKILLS

Programming languages and tools: Python, Matlab, Java, Git, L^AT_EX, Linux

Packages: Numpy, Pandas, Matplotlib, TensorFlow

Applied math: Data assimilation, dimension reduction, geometric algebra, tensors, multiscale modeling

RELEVANT EXPERIENCE

NASA: Internship Program [↗](#) | Topological Plasmas 06/2021 – 08/2021

NASA Glenn Research Center, Cleveland, OH (Remote)

- Collaborated with a small group to use topological electrodynamics and topological fluid dynamics in order to better understand plasma physics.
- Writing a paper describing the use of homological currents in electrodynamics.

AIM: Summer Program on COVID-19 Modeling [↗](#) | Multiscale Modeling 06/2020 – 07/2020

American Institute of Mathematics, San Jose, CA (Remote)

- Worked with two collaborators to develop a multiscale epidemic model to predict the impact that different mitigation techniques would have on the spread of COVID-19 in communities with schools. [\[Github\]](#)[\[Article\]](#)
- Provided software and insight used by JBS Foods in Greeley, CO.

AIM: Engagement Program with MCRN [↗](#) | Data Assimilation 07/2019 – Present

Raleigh, NC & Remote

- Worked with eight other collaborators to develop novel code that combines data reduction techniques with a particle filter algorithm to improve the utility in high dimensional models. [\[Publication\]](#)
- Working with three of the same collaborators to apply our code to ocean-atmosphere models in order to analyze its performance and attempt to explore the exchange of information through the sea-surface. [\[Github\]](#)

Graduate Student | Research and Teaching 08/2017 – Present

Colorado State University, Fort Collins, CO

- **Thesis topic:** Using tools from Clifford analysis to explore the algebraic structure of multivector fields on manifolds.
- Writing a paper on Banach algebras of multivector fields.
- Taught 10 semesters, taught 7 different courses, and developed the content of 4 courses. [\[Materials\]](#)
- Developed an open source textbook with Matlab tools catered to the applied mathematics for chemists course sequence at Colorado State University. [\[Github\]](#)

EDUCATION

Colorado State University, Fort Collins, CO, USA

08/2012 – Present

Doctor of Philosophy, Mathematics

Expected May 2022

Bachelor of Science, Mathematics & Physics

May 2017