

RAMAN MUKUNDAN

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U.S. Citizen

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INTERESTS

I am a physicist with the mind of an engineer, or sometimes the other way around. I am interested in technologies that assure the safety of instrumentation and human life in space and on other worlds.

EDUCATION

Doctor of Philosophy in Physics, University of New Hampshire 2020 - Present

Bachelor of Arts in Physics, University of Colorado Boulder 2016 - 2019

RESEARCH

Geomagnetic Disturbance Modeling Aug 2020 - Present

University of New Hampshire - Research advisor: Dr. Amy Keese

Developing space weather forecasting models to predict geomagnetically induced currents (GICs). Implemented neural networks and other machine learning algorithms for high-cadence timeseries analysis.

This work is supported by an NSF EPSCoR Track-2 Award as part of the MAGICIAN collaboration between University of New Hampshire and University of Alaska Fairbanks.

PEER-REVIEWED PUBLICATIONS

- Pinto, V.A., *et al.* (2022) "Revisiting the Ground Magnetic Field Perturbations Challenge: A Machine Learning Perspective." *Frontiers in Astronomy and Space Sciences*, 9:869740. doi: 10.3389/fspas.2022.869740

PROJECTS

CU Boulder Honors Thesis 2019

Research advisors: Dr. Daniel Baker and Dr. Thomas Berger

Independently studied theoretical ground-level enhancement precursor signals in neutron monitor data. Applied solar physics, time series analysis, and machine learning techniques. Wrote a final paper and defended a thesis before a committee. Awarded *summa cum laude*.

Colorado Space Grant Consortium: Project Chimera 2017-2018

Created a lightweight, low-cost stratospheric cosmic ray detector as part of a student-led team. Collaboratively designed and built a multi-channel CsI(Tl) scintillator, supporting hardware and software, and data analysis algorithms. This project was funded by an Undergraduate Research Opportunity Program (UROP) grant.

SKILLS

Computer Languages	Python, C/C++, Java
Human Languages	English, French
Data Analysis	Spacecraft data, predictive analytics
Social	Third degree black belt in karate