

# Rees McNally

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## Columbia University (2020)

Doctorate: Physics  
Master of Science: Physics  
Master of Philosophy: Physics

## University of Colorado (2014)

Bachelor of Science: Applied Mathematics  
Bachelor of Science: Engineering Physics  
Minor: Electrical Engineering

## Work Summary

I have a demonstrated history of finding creative, data driven solutions to complex problems and leading small teams to quantifiable results on a wide variety of topics. This includes 8+ peer reviewed papers on such disparate topics as satellite dynamics, atomic clocks, cold molecules, novel laser designs, and dark matter detection. I am interested in taking this background and using it to find creative insights into more applied problems.

## Columbia University: PhD in Physics

### Graduate Teaching Fellow

*Dec 2015 - Present*

- Taught numerous undergraduate recitations for physics courses from the 1000-4000 level.
- Lead instructor for the senior physics lab where I added a new experiment to the curriculum, studying a relic of the big bang from a rooftop in Manhattan.
- Founded and led (2016-2019) a biweekly graduate student seminar series to help graduate students improve presentation skills. Has had 50+ seminars, with a typical attendance of 30.

### Graduate Research Fellow: Professor Tanya Zelevinsky

*Dec 2015 - Present*

- Led the design and implementation of an experiment to study the properties of cold molecules.
- Managed a team of  $\approx 4$  undergraduate, graduate, and post-doctoral researchers.
- The results I obtained led to a \$1 million grant from the W.M. Keck Foundation to extend this work. This will be a flagship experiment in my advisor's lab for the foreseeable future.

### Independent Research: Dark Matter Data Mining

*Dec 2018 - Present*

- Used an existing database of geological measurements to try and detect a specific type of dark matter. This is cutting edge science enabled by the creative use of existing data.
- This work is now being integrated into a larger dark matter hunting collaboration between four universities, and we are currently applying for funding to expand this project.

## University of Colorado: Bachelor's and Gap Year

### Undergraduate Research Assistant: Professor Jun Ye

*Aug 2013 - Jun 2015*

- Worked on control theory optimization for the pulse sequence used in the most accurate atomic clock in the world (at the time). An example of quantum optimal control.

### COSGC/Air Force Research Labs - DANDE satellite mission: *May 2011 - May 2013*

- Before launch, on the maiden voyage of SpaceX Falcon 9 v1.1 rocket, I was the integration and testing lead during final assembly of the satellite, managing a team of five other students.
- After launch, I was named the data analysis and science lead for the project, working with scientists at a Boulder company, ASTRA, to maximize the usefulness of the mission data.

## Skills

- Python: Used daily for data analysis and for data mining
- MATLAB/Mathematica: Used for simulations and theory work
- Technical writing and simple presentation of complicated issues
- Data visualization and exploration

## Awards

- CU Boulder's Fall 2014 Outstanding Graduate for Research
- Graduated Summa Cum Laude
- 2017 NSF: GRFP Fellowship Honorable Mention
- 2017 NSF: IGERT Fellowship Award recipient
- 2019 Allen M Sachs Teaching Award for outstanding graduate student instruction