

# 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

### Undergraduate Research Assistant: Professor Jun Ye

*Aug 2013 - Jun 2015*

- Worked on the strontium optical lattice clock, which at the time was the most accurate clock in the world. Work featured in the national and local press (see my website for details).

### 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 became as 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: Used for simulations
- Mathematica: Used as a theory tool
- 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