

# Tommy Subak

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(610)-554-9435

## Education

**Colgate University**, Hamilton, NY

Bachelor of Arts, May 2023, *summa cum laude*

Major: Astrogeophysics (with honors); Minor: Mathematics

GPA: 3.64/4.00 Major GPA: 3.74/4.00

Dean's Award for Academic Excellence (3), with Distinction (3)

**National University of Singapore Approved Exchange Program**, Spring 2022

Independent semester of study at the National University of Singapore with coursework in physics and mathematics.

## Research Experience

**Research Assistant**, Summer 2022

Colgate University, Department of Earth and Environmental Geosciences

*Water Tracks in McMurdo Dry Valleys/Martian Chaos Mapping*, Advisor: Joe Levy

Studied Antarctic dirt samples in order to better understand meltwater processes relating to water tracks. Filtered, diluted, and tested samples before using Ion Chromatography to test the effect of cation exchange on the brine. Used R to examine the relationship between organic matter, soluble salt data collected from Ion Chromatograph and ICP-Mass Spectrometer, and electrical conductivity. Used ArcGIS to map chaos features on Mars. Used R to analyze the individual and greater datasets with the objective of determining the formation process.

**UROPS Student Researcher**, Spring 2022

National University of Singapore, Centre for Quantum Technologies, Quantum Optics Group

*Seismic Sensing with Deployed Optical Fibers*, Advisor: Christian Kurtsiefer

Designed and constructed a simple Michelson interferometer to better understand how interferometry could improve oceanic seismometry. Background lit review of approximately thirty textbooks and articles to better understand optical concepts and practical applications. Weekly journal club with group to discuss modern optical concepts in-depth and strategize group project direction.

**Research Assistant**, Summer 2020

Colgate University, Department of Earth and Environmental Geosciences

*Seismicity in Alaskan Subduction Zones*, Advisor: Aubreya Adams

Analyzed geophysical data using MATLAB to map large scale earthquakes and study their relationship to subduction zones. Examined research papers and proposals for an exploration of academic research processes.

## Teaching Experience

*Teaching Assistant (Phys 111)*, Fall 2021

Colgate University, Department of Physics and Astronomy

Administered group peer tutoring sessions of 10 students once a week. Emphasized collaborative learning through problem sets for greater understanding of course material.

*Mathematics Tutor*, Fall 2021, Fall 2022

Colgate University, The Center for Learning, Teaching, and Research

Assisted students individually with coursework from calculus, linear algebra, and number theory.

## Science Outreach and Engagement

*Student Ambassador*, Spring 2021-Present

American Physical Society

Connect directly with campus students to spread information about APS and opportunities it provides. Strategize with team on how to promote opportunities to pursue diversity, equity, and inclusion goals.

*Co-Founder and Co-President*, Fall 2021-Present

Colgate University, Colgate Student Society for Atomic, Molecular, and Optical Physics

Plan organization and biweekly meetings with the goals of educating and spreading enthusiasm about Atomic, Molecular, and Optical Physics. Design lessons accessible for those who have experience in and knowledge of Physics, as well as general members interested in the material.

## Technical Skills

**Programming Languages:** Advanced proficiency in Matlab, proficient in R and Python (with Machine Learning experience in Python), and beginner proficiency in C++.

**Software:** Proficient in LaTeX, ArcGIS, and Microsoft Office.

## Additional Work Experience

*Network Engineering Intern*, Summer 2021

Colgate University, Information Technology Services

Undertook 9 projects for purposes of maintenance and improvement to the campus network.

Completed over 100 individual tickets, processed over 400 network switches, and completed dozens of installations which aided in campus development.