Maitland Bowen

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Education

University of Colorado Boulder — Boulder, CO
Astrophysical & Planetary Sciences — *Aug 2021 - present*

- PhD Candidate (Expected graduation May 2027)
- Master's Degree (Graduated Dec. 2023)

University of Michigan — Ann Arbor, MI
Bachelor of Science, Physics and Interdisciplinary Astronomy — *Graduated with University Honors, May 2021*

Research

Graduate Research Assistant — Boulder, CO
CU Boulder Laboratory for Atmospheric and Space Physics — *Aug 2021 - present*

- Lead graduate student on Supernova Remnants and Proxies for Re-Ionization Testbed Experiment (SPRITE) Cubesat
- PI: Prof. Brian Fleming

Summer Research Fellow — Blacksburg, VA
Virginia Polytechnic Institute and State University — *May 2019 – Aug 2019*

- Research Experience for Undergraduates (REU) program at Center for Neutrino Physics investigating comparison of neutrino detection processes from nuclear reactors
- PI: Prof. Patrick Huber

Undergraduate Research Assistant — Ann Arbor, MI
UM Department of Physics — *May 2017 - Dec 2019*

- Created CAD models of Simons Observatory for optical testing
- PI: Prof. Jeffrey McMahon

Work Experience

Spacecraft Mechanical Engineering Undergraduate Co-op — May 2020 – Feb 2021
NASA Jet Propulsion Laboratory — *Pasadena, CA (remote)*

- Qualification Model Dirty Testing (QMDT) support for the Sample Caching System for the Mars 2020 Perseverance Rover as part of the Planetary Sample Acquisition and Handling Group
- Group Supervisor: Lori Shiraishi; QMDT Supervisor: Jeff Megivern

Telescope Operator — Nov 2016 - Mar 2020
Department of Astronomy, University of Michigan — *Ann Arbor, MI*

- Operated and troubleshooted multiple observatory telescopes and instructed students in observational coursework
- Supervisor: Shannon Murphy

Grader — Nov 2018 - Dec 2018
Department of Astronomy, University of Michigan — *Ann Arbor, MI*

- Graded homework, labwork, and observational logs for introductory astronomy classes
- Supervisor: Shannon Murphy

Publications

Bowen, M., Fleming, T., Indahl, B., Vorobiev, D., Szewczyk, D., France, K., Rodriguez de Marcos, L., Quijada, M., Hennessey, J. "Preliminary optical performance of the SPRITE CubeSat instrument." SPIE Conference Series 12678 (2023).

Szewczyk, D., **Bowen, M.**, Indahl, B., Vorobiev, D., Durell, A., Rodriguez de Marcos, L., Hennessy, J., Chafetz, D., Fleming, B. "Facilities, testbeds, and procedures for characterizing the SPRITE Far-UV CubeSat." SPIE Conference Series 12678 (2023).

Indahl, B., Fleming, B., Vorobiev, D., Chafetz, D., Williams, J., **Bowen, M.**, et. al. "Status and mission operations of the SPRITE 12U CubeSat: a probe of star formation feedback from stellar to galactic scales with far-UV imaging spectroscopy" SPIE Conference Series 12678 (2023).

Rodriguez de Marcos, L., Fleming, B., Hennessy, J., Chafetz, D., Del Hoyo, J., Quijada, M., **Bowen, M.**, Vorobiev, D., Indahl, B. "Advanced Al/eLiF mirrors for the SPRITE CubeSat" SPIE Conference Series 12188 (2022).

Diaz, A., Vorobiev, D., Indahl, B., Chafetz, D., Snyder, W., Williams, J., **Bowen, M.**, Fleming, B. "Fabrication and testing of high fill-factor solar panels for SPRITE CubeSat." SPIE Conference Series 12678 (2023).

Bowen, M. & Huber, P. "Reactor neutrino applications and coherent elastic neutrino nucleus scattering." *Phys. Rev. D, 102,* 053008 (2020).

Oral Presentations

Bowen, M. **"Technological advancements for far-ultraviolet spectroscopy with the SPRITE CubeSat."** JPL UV Science and Instrumentation Workshop: On the Way to the NASA Habitable Worlds Observatory and Beyond (2024).

Bowen, M. **"Characterization of the Performance of the SPRITE Telescope."** SPIE Optics + Photonics, Conference 12678: UV, X-Ray, and Gamma-Ray Space Instrumentation for Astronomy XXIII (2023).

Bowen, M. **"CEvNS for Nuclear Security."** APS April Meeting (2020).

Poster Presentations

Technological advancements for far-ultraviolet spectroscopy with the SPRITE CubeSat

- *International Society for Optics and Photonics (SPIE) Astronomical Telescopes + Instrumentation Conference* June 17; Yokohama, Japan

Inverse beta decay and coherent elastic neutrino-nucleus scattering – a comparison

- *National Conference of the American Indian Science and Engineering Society (AISES)* Oct. 11, 2019; Milwaukee, WI

CMB-S4/10ths: Modeling the Next Generation of Cosmic Microwave Background Telescopes

- *Vera Rubin Symposium* — June 26, 2019; Georgetown University, Washington D.C.
- *American Physical Society (APS) Conference for Undergraduate Women in Physics (CUWiP)* — Jan. 20, 2019; Michigan State University, East Lansing, MI
- *National Conference of the American Indian Science and Engineering Society (AISES)* — Oct. 5, 2018; Oklahoma City, OK
- *American Physical Society (APS) Conference for Undergraduate Women in Physics (CUWiP)* — Jan. 14, 2018; University of Toledo, Toledo, OH

Community & Leadership

Partners Across the Sky Graduate Mentor May 2024 – Aug 2024
Astrophysical & Planetary Sciences Department *Boulder, CO*

- Mentor Indigenous students pursuing independent research projects in astronomy
- Organize educational and extracurricular programming

First Nations Launch Team Graduate Advisor Oct 2023 – present
Colorado Space Grant Consortium *Boulder, CO*

- Advise CU Boulder's American Indian Science and Engineering Society (AISES) student chapter team on building, testing, and launching L2 rocket
- Mentor Indigenous students pursuing educations and careers in STEM

Representation, Recruitment, and Retention Committee Co-Chair Aug 2021 – Aug 2023
Astrophysical & Planetary Sciences Department *Boulder, CO*

- Organized and facilitated committee meetings
- Contributed to diversity, equity, and inclusion strategic reports
- Developed and led initiatives to advocate for historically marginalized students

Student Success Program Coordinator May 2018 – Apr 2019
UM Office of Academic Multicultural Initiatives *Ann Arbor, MI*

- Created and coordinated STEM support program for cohort of 150 historically marginalized students
- Planned, wrote, and administered curriculum for technical workshops

Chair of the Native American Student Association Jan 2018 – Apr 2020
UM Office of Academic Multicultural Initiatives *Ann Arbor, MI*

- Lead student coordinator of one of the largest student-run powwows in North America
- Developed initiatives to recruit and retain Indigenous students to higher education
- Served on task force committee to advise University administration on the issues of Native American students

Service

- Astrophysical & Planetary Sciences Graduate Concerns and Curriculum Committee member (2024)
- Session Proposal Reviewer for Society for the Advancement of Chicanos/Hispanics & Native Americans in Science (SACNAS) National Diversity in STEM (NDiSTEM) Conference (2024)
- Scribe for NASA Informing Large Missions (class A-C) from SmallSat/Class D Workshop (2024)

Awards & Recognition

APS Astrophysics Graduate Fellowship Award
Henry Pearce Endowed Scholarship
2020 Student Life Michigan Difference Cross-Cultural Programming Award
UM College of Literature, Science, and the Arts Alumni Scholarship
Department of Physics Walter W. Wada Award for Community Engagement
Leona G. and Jessie W. Probst Dean's Merit Scholarship
College of Literature, Science, and the Arts Internship Scholarship
Regents Merit Scholarship
Gerhard and Ruth Gettel Scholarship
Michigan Competitive Scholarship
Arthur J. Miller Scholarship

Professional Affiliations

American Astronomical Society (AAS)
American Indian Science and Engineering Society (AISES)
Society for the Advancement of Chicanos/Hispanics & Native Americans in Science (SACNAS)
SPIE, the International Society for Optics and Photonics

Technical Skills

Programming Languages: Python (proficient), LaTeX (intermediate), C++ (beginner), SQL (beginner)
Technical Software: Zemax, SolidWorks, Jupyter Notebooks, JMP, Xcode
Certifications: General Laboratory Safety Training, ESD Safety Training, Clean Room Procedures

Leisure Activities

Sports: Tennis, Hiking, Snowboarding, Horseback Riding and Training, Kayaking, Paddle boarding, Camping
Music: Piano, Oboe, Vocals, Music Composition
Languages: Swedish