Kyle McGregor

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Education

Wesleyan University — Middletown, CT
Bachelor of Arts — *May 2024*
- Double Major in Astronomy and Physics, graduated with High Honors in Astronomy
- GPA: 3.72

McGill University — Montreal, QC
Master of Science — *Expected May 2026*
- Co-advised by Vicky Kaspi and Jason Hessels

Experience

Graduate Teaching Assistent — August 2024 - Present
McGill University — *Montreal, QC*
- Teaching Assistant for PHYS 101 - Introductory Physics for the Fall 2024 term. Supervised a team of 20 undergraduate teaching mentors for tutorial sessions one night each week, serving as substitute when necessary.
- Marked midterm and final exams, with a team of 15 other graduate teaching assistants, for a class of more than 600 students.

NSF Research Experiences for Undergraduates (REU) Student — May 2023 - August 2023
West Virginia University — *Morgantown, WV*
- Worked under mentor Dr. Duncan Lorimer on population synthesis of repeating Fast Radio Bursts (FRBs). Developed a publication in the Astrophysical Journal (McGregor and Lorimer 2024).
- Assisted in weekly public outreach program at WVU Observatory and Planetarium, including running a planetarium show at the end of the program.

Undergraduate Researcher — February 2021 – May 2024
Wesleyan University Department of Astronomy and Van Vleck Observatory — *Middletown, CT*
- Member of Prof. Seth Redfield's Exoplanets and ISM research group, focusing on modeling populations of exoplanet systems containing multiple planets near mean-motion resonance.
- Completed undergraduate thesis project–*A New Metric Revealing an Overabundance of Multiple Planet Systems Near Mean-Motion Resonance*

Principal Observer, VVO 24-Inch Automated Telescope — April 2021 – May 2024
Wesleyan University Department of Astronomy and Van Vleck Observatory — *Middletown, CT*
- Leading undergraduate of Wesleyan's 24-inch Planewave CDK reflector commissioning team. Leading student worker for research, outreach, and teaching work with the telescope. My work directly brought about full automation of the instrument in Summer 2022.
- Implimented observing campaigns for transiting exoplanets, occultations of Trans-Neptunian objects, exoplanet host stars, optical transient monitoring.
- Addressed technical problems associated with implementing a remote observatory system, led weekly commissioning meetings with students and faculty, ran regular training sessions for new system.

Course Assistant — August 2021 – December 2022
Wesleyan University Department of Astronomy and Van Vleck Observatory — *Middletown, CT*
- CA for ASTR111 The Dark Side of the Universe (Fall 2021) and ASTR105 Exploring the Cosmos (Fall 2022).
- Marked homework assignments and exams. Ran weekly CA hours and observing nights for students.

Refereed Publications

Modeling Current and Future High-Cadence Surveys of Repeating FRBs
- **K. McGregor**, D. R. Lorimer, Astrophysical Journal, 961, 10, (arXiv:2309.11522)

A study of centaur (54598) Bienor from multiple stellar occultations and rotational light curves
- J. L. Rizos, E. Fernández-Valenzuela, J. L. Ortiz, F. L. Rommel, B. Sicardy, [...], **K. McGregor**, [...], Astronomy and Astrophysics, 689, A82 (arXiv:2405.17235)

The Two Rings of (50000) Quaoar
- C. L. Pereira, B. Sicardy, B. E. Morgado, F. Braga-Ribas, E. Fernández-Valenzuela, [...], **K. McGregor**, [...], Astronomy and Astrophysics, 673, L4 (arXiv:2304.09237)

Conference Contributions

243rd Meeting of the American Astronomical Society January 2024
- *Predictions for Current and Future High-Cadence Observations of the Repeating Fast Radio Burst Population* (iposter)

2023 WVU Summer Undergraduate Research Symposium July 2023
- *Simulating the CHIME/FRB Repeating Fast Radio Burst Population* (poster)

2022 KNAC Undergraduate Student Research Symposium October 2022
- *Considering Resonant Chains of Exoplanets by their Offsets from Pure Commensurability Chains* (talk)

2022 Wesleyan Summer Research Poster Session July 2022
- *Commensurability Offsets as a Tool for Comparative Characterization of Resonant Exoplanet Chains* (poster)

2022 Northeast Star and Planet Formation Meeting July 2022
- *Commensurability Offsets as a Tool for Comparative Characterization of Resonant Exoplanet Chains* (talk)

Outreach Work

Space/Kids Nights at the Van Vleck Observatory September 2023 - May 2024
Wesleyan University Department of Astronomy and Van Vleck Observatory *Middletown, CT*
- Weekly rain-or-shine public outreach program including a half-hour public talk and telescope observing or astronomy activity.

Public Observing at the Van Vleck Observatory September 2021 - September 2023
Wesleyan University Department of Astronomy and Van Vleck Observatory *Middletown, CT*
- Organized and led weekly hour-long telescope viewing sessions for the local Wesleyan community. Operated in compliance with ongoing COVID-19 restrictions.
- One of three student co-leaders for more than 25 weekly events over the course of my Sophomore and Junior year.

Volunteer at WVU Planetarium and Observatory May 2023 – July 2023
West Virginia University *Morgantown, WV*
- Helped organize and lead free weekly planetarium shows for the greater Morgantown community. Mentored by WVU graduate students to learn planetarium software and presentation skills.
- Delivered an hour-long sold-out public show at the end of the REU program.

Funding Sources

Littell Prize, Wesleyan University Department of Astronomy $500 USD

National Science Foundation REU Grant $7200 USD

Undergraduate Scholarship, Connecticut Space Grant Consortium $3000 USD

Summer Fellowship for Research in the Sciences, Wesleyan University $8000 USD

Activities

Student-Athlete, Wesleyan Swimming and Diving Team September 2020 - February 2024
Wesleyan University *Middletown, CT*
- More than 20 hours per week of practices during the winter season (November to February). Weekends in-season are often occupied by competitive meets, both at home and away, against other schools in the NESCAC.

President and Captain, Wesleyan Co-ed Club Water Polo Team April 2022 - May 2024
Wesleyan University *Middletown, CT*
- Team leader for Wesleyan's water polo club team. Includes coordinating practices and competitions as a member of a collegiate club league alongside building an inclusive, welcoming, and driven team culture.

Skills

Programming Languages: Python, Docker, R, Julia, ACP Scripting, LaTeX
Software: Unix, CASA, Mathematica, AstroImageJ, SAOImageDS9, ACP, MaxIm DL, ASCOM, Blender
Foreign Languages: Italian (proficient), French (elementary)