Riley McGlasson

rmcglass@purdue.edu • rmcglass.github.io

Education

Purdue University — **West Lafayette, IN**
PhD, Planetary Sciences — *2020 – Present*
Macalester College — **Saint Paul, MN**
B.A., Physics (Astronomy emphasis) and Mathematics Minor — *2016–2020*
Acquincum Institute of Technology, Budapesti Műszaki Egyetem — **Budapest, Hungary**
Semester in Computer Science Abroad — *Fall 2018*

Research Experience and Professional Preparation

Graduate Research Assistant — **West Lafayette, IN**
Purdue University — August 2020 – Present
Advisor: Dr. Ali Bramson
- Analyzing SHARAD radar observations of Mars' polar regions.
- Developing Martian radar analog lab capabilities for the Bramson Lab.

Astronomy Ranger Intern — **Bryce, UT**
Bryce Canyon National Park — *Summer 2019*
- Developed and presented astronomy interpretive programs.
- Led educational "telescope tours" of planets, constellations, and deep sky objects to visitors of Bryce Canyon National Park.
- Presented "A Message to the Universe", a public talk about the Voyager missions, to 100+ visitors at the Bryce Canyon Annual Astronomy Festival.

REU Student Researcher — **Arecibo, Puerto Rico**
Arecibo Observatory — *Summer 2018*
Advisor: Dr. Sean Marshall and Dr. Flaviane Venditti
- Developed a shape model for the potentially hazardous asteroid Midas.
- Performed approximately 50 radar observations of near-Earth asteroids using the Arecibo 305-meter radio telescope.

REU Student Researcher — **Huntsville, AL**
University of Alabama in Huntsville/NASA MSFC — *Summer 2017*
Advisor: Dr. Navdeep Panesar
- Studied the magnetic origins of solar coronal jets.

Undergraduate Research Assistant — **Saint Paul, MN**
Macalester College — *Spring 2017*
Advisor: Dr. John Cannon
- Performed the first characterization of the neutral ISM in two local volume dwarf galaxies using the HI 21cm spectral line.
- Determined cluster membership for galaxies around the Pisces-Perseus Supercluster, as part of the Arecibo Pisces-Perseus Supercluster Survey.

Peer-Reviewed Journal Publications

1. **McGlasson, R. A.**, Sori, M. M., Bramson, A. M., Lalich, D. E. (2024). Radar sounding reveals common evolutionary history between the north polar layered deposits and an outlier ice deposit on Mars. *Accepted in GRL.*
2. **McGlasson, R. A.**, Bramson, A. M., Morgan, G. A., Sori, M. M., (2023). Varied Histories of Outlier Polar Ice Deposits on Mars. Journal of Geophysical Research: Planets, 128, e2022JE007592.

3. Virkki, A. K., Marshall, S. E., Venditti, F., et al. **(incl. McGlasson, R. A.)**, (2022). Arecibo Planetary Radar Observations of Near-Earth Asteroids: 2017 December - 2019 December. Planetary Science Journal, 3, 222.
4. Sori, M.M., Becerra, P., Bapst, J., Byrne, S., and **McGlasson, R. A.**, (2022). Orbital forcing of Martian climate revealed in an outlier ice deposit. Geophysical Research Letters, 49, e2021GL097450.
5. **McGlasson, R. A.**, Marshall, S. E., Venditti, F., et al. (2022). Radar and Lightcurve Observations and a Physical Model of Potentially Hazardous Asteroid 1981 Midas. The Planetary Science Journal, 3, 35.
6. **McGlasson, R. A.**, Panesar, N. K., Sterling, A. C., Moore, R. L., (2019). Magnetic Flux Cancellation as the Trigger Mechanism of Solar Coronal Jets. The Astrophysical Journal, 882, 16.
7. Cannon, J.M., Shen, Z., et al. **(incl. McGlasson, R. A.)**, (2018). Delayed Stellar Mass Assembly in the Low Surface Brightness Dwarf Galaxy KDG 215. The Astrophysical Journal Letters, 864, L14.
8. Bralts-Kelly, L., Bulatek, A. M., et al. **(incl. McGlasson, R. A.)**, (2017). First Characterization of the Neutral ISM in Two Local Volume Dwarf Galaxies. The Astrophysical Journal Letters, 848, L10.

Conference Posters and Presentations

* Indicates R. A. McGlasson is presenting author
† Indicates oral presentation

1. E. S. Shoemaker**, R. A. McGlasson**, A. M. Bramson (2024). Testing Detectability of Pore-Filling Ice with Ground-Penetrating Radar for Planetary ISRU at Hekla Volcano, Southern Iceland. American Geophysical Union Fall Meeting 2024.
2. *†**McGlasson, R.A.,** Bramson, A.M. (2024). Laboratory Experiments on the Effect of Ice Layer Thickness and Dust Content on Radar Reflectivity. p. 6057, 8th International Conference on Mars Polar Science and Exploration, Whitehorse, Canada.
3. Sori, M.M., Bapst, J., Beccera, P., Bramson, A.M., Byrne, S., Checketts, B.M., Durham, A., Horgan, B.N., Lawrence, I.T., **McGlasson, R.A.,** Patel, N., Petrini, E.Z., Tikoo, S.M., Zorzi, A. (2024). Climate records of outlying polar ice deposits on Mars. p. 6002, 8th International Conference on Mars Polar Science and Exploration, Whitehorse, Canada.
4. ***McGlasson, R.A.**, Vannier, H., Bramson, A.M. (2024). In Situ Hydration Assessment via Ground Penetrating Radar and Spectroscopy at the Mars Desert Research Station. p. 1528, 55th LPSC, The Woodlands, TX.
5. ***McGlasson, R.A.**, Sori, M.M., Bramson, A.M., Lalich, D.E. (2023). Radar Sounding Observations Reveal Stratigraphic Similarity Between Ice Deposits at the Polar Cap and in Korolev Crater on Mars. AAS Division of Planetary Sciences (DPS), #222.
6. ***McGlasson, R.A.**, Bramson, A.M., Sori, M.M., Lalich, D.E. (2023). Time Series Analysis and Geologic Modeling of Radar Reflectors within Polar Outlier Ice Deposits in Korolev and Burroughs Craters on Mars. 54th Lunar and Planetary Science Conference, #2118.
7. †Sori, M.M., Laferriere, K.L., Burkman, K.S., Herring, J., Klidaras, A., Manelski, H.T., **McGlasson, R.A.**, Menten, S.M., Pamerleau, I.F., Pérez-Cortés S.L. (2023). Hollows as a Source for Mercury's Polar Organics. 54th Lunar and Planetary Science Conference, #1103.
8. †Broad, K.E., Sadler, B.O., Hoover, S.L., James, P.B., Robitaille, B.A., Büttner, C., Schmitt, D.R., **McGlasson, R.**, Bramson, A.M., Sori, M. M., Hutton, L. M., Delph, J. R. (2023). A Gravity Survey of the Kentland Crater Formation. 54th Lunar and Planetary Science Conference, #2715.
9. Hoover, S.L., Broad, K.E., Sadler, B.O., James, P.B., Robitaille, B.A., Büttner, C., Schmitt, D.R., Bramson, A.M., Sori, M.M., Hutton, L.M., **McGlasson, R.** (2023). A Gravity Gradient Method for Calculating Bulk Density in Topographically Complex Areas. 54th Lunar and Planetary Science Conference, #2857.
10. Bramson, A.M., Laferriere, K., Izquierdo, K., **McGlasson, R.** (2022). Constraining Mars' Polar Environment through Multi-faceted Analyses of Orbital GPR Data. 19th International Conference on Ground Penetrating Radar.
11. ***McGlasson, R. A.**, Sori, M. M., Bramson, A. M., (2022). A Significant Periodicity of NPLD Layers as Revealed by SHARAD Observations. 53rd Lunar and Planetary Science Conference, #2063.

12. *†**McGlasson, R. A.**, Bramson, A. M., Morgan, G. A., Sori, M. M., (2021). Subsurface Radar Observations of Outlier Polar Ice Deposits on Mars. American Geophysical Union Fall Meeting 2021, #P32D-05.
13. Sori, M.M., Beccera, P., McGlasson, R.A., Bapst, J., Byrne, S. (2021), Morphology of crater ice deposits on Mars reveals Earth-like Milankovitch climate forcing, American Geophysical Union Fall Meeting 2021, 812204.
14. *†**McGlasson, R. A.**, Bramson, A. M., Morgan, G. A., Sori, M. M., (2021). Subsurface Radar Observations of Outlier Polar Ice Deposits on Mars. 52nd Lunar and Planetary Science Conference, #1649.
15. Repp, D. W., Marshall, S. E., et al. **(incl. McGlasson, R. A.)**, (2020). Shape modeling of potentially hazardous asteroid 2015 DP155 from radar and lightcurve observations. 51st Lunar and Planetary Science Conference, #2897.
16. Taylor, P. A., Rivera-Valentín, E. G., **(incl. McGlasson, R. A.)**, (2019). Radar and Optical Observations of Equal-Mass Binary Near-Earth Asteroids (190166) 2005 UP156 and 2017 YE5. 50th Lunar and Planetary Science Conference, #2945.
17. ***McGlasson, R. A.**, Marshall, S. E., et al., (2019). Shape Model of Potentially Hazardous Asteroid (1981) Midas from Radar and Lightcurve Observations. American Astronomical Society Meeting #233, 255.03.
18. Taylor, P. A., Brozovic, M., et al. **(incl. McGlasson, R. A.)**, (2018). Radar and Optical Observations of Equal-Mass Binary Near-Earth Asteroid 2017 YE5. American Astronomical Society Division of Planetary Sciences meeting #50, 508.07.
19. Marshall, S. E., Cobb, A., et al. **(incl. McGlasson, R. A.)**, (2018). Using Bayesian Optimization to Find Asteroids' Pole Directions. American Astronomical Society Division of Planetary Sciences meeting #50, 505.01D.
20. ***McGlasson, R. A.**, Panesar, N. K., Sterling, A. C., Moore, R. L., (2017). Magnetic Flux Cancellation as the Trigger Mechanism of Solar Coronal Jets. American Geophysical Union Fall Meeting 2017, #SH43A-2796.

Awards and Grants

Employee Recognition Award for Departmental Achievements (Purdue EAPS) *2024*

Future Investigators in NASA Earth and Space Science and Technology (FINESST) Fellow *2023-2026*

Zonta International Amelia Earhart Fellow *2023*

Purdue University Graduate Teaching Award *2023*

Purdue TA Honor Roll *Fall 2021, Fall 2022*

Purdue Student Service-Learning Grant *2021*
In support of development of the Astronomy on Tap program

NSF Graduate Research Fellowship Program, Honorable Mention *2021*

Lunar and Planetary Institute Career Development Award *2021*
52nd Lunar and Planetary Science Conference

Macalester Physics Department's Dr. Sherman W. Schultz Memorial Award *2020*

Chambliss Astronomy Achievement Award Student Prize *2019*
American Astronomical Society 233rd meeting

Field Experience

- Ground Penetrating Radar collection at 100, 200, 450, and 750 MHz for buried ice detection at Askja and Hekla volcanic regions, Iceland.
- Ground Penetrating Radar survey at 100 MHz of alluvial fan at Thingvellir National Park, Iceland.
- Ground Penetrating Radar collection at 450 MHz near the Mars Desert Research Station (MDRS; Hanksville, UT) as Executive Officer of Crew 288, a two-week-long analog astronaut mission at the MDRS.
- Ground Penetrating Radar collection at 80 and 160 MHz at the Kentland Crater impact structure.

Teaching Experience

EAPS 111: Physical Geology — Fall 2020, Fall 2021, Fall 2022
Lab TA for Purdue introductory geology class

EAPS 100: Planet Earth — Spring 2022
TA for asynchronous online Purdue introductory Earth Science class

PHYS 440: Observational Astronomy — Spring 2020
Undergraduate TA for Macalester upper-level observational astronomy course

PHYS 113: Modern Astronomy I — Spring 2019
Undergraduate TA for Macalester introductory astronomy course

Volunteer Service and Outreach

Peer Reviewer — 2022 – Present
Geophysical Research Letters and *Journal of Geophysical Research: Planets*

"Leading Women to Space Careers" Mentor — 2022–2023
Graduate student mentor for pilot mentorship program in the Purdue Honors College

Prospective Student Expo Coordinator — 2022–2023
Organized the 2022 (virtual) and 2023 (in person) prospective student interview weekends for Purdue EAPS.

EAPS Graduate Student Mentorship Program Coordinator — 2022
Organized mentorship pairs and development programs to support incoming graduate students in Purdue EAPS.

Astronomy on Tap Organizer: — Fall 2021–Fall 2023
Established and served as primary organizer for the Lafayette, IN satellite series of "Astronomy on Tap".

Radio Host — Fall 2017–Spring 2020
Hosted Radio Astronomy: Macalester College's astronomy talk show on WMCN 91.7 FM

Host and Telescope Operator — Fall 2017, Fall 2019
Macalester College Public Observing Nights

"Ask a Scientist Booth" Scientist — Summer 2018
Arecibo Observatory Noche de Observación

NASA in the Park Presenter — Summer 2017
Presented vacuum chamber experiments at the annual NASA in the Park event, Huntsville, AL

Destination Imagination Appraiser — 2017–2020
Judged teams (elementary–high school levels) at the regional and state-level for Destination Imagination, a global creative problem-solving competition.