Henry Manelski

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EDUCATION

Purdue University **05 2022 – Present**
*PhD Student - **Planetary Science**, Advisor: Roger Wiens* *West Lafayette, IN*

Columbia University **08 2018 – 05 2022**
*BSc - **Applied Mathematics**, GPA: 3.56* *New York, NY*

SELECTED COURSEWORK

- Dynamical Systems
- Geochemistry for a Habitable Planet
- Mathematics of Data Science
- Space Instrumentation
- Laboratory Analysis of Planetary Materials
- Mars Seminar
- Partial Differential Equations
- Stochastic Systems

WORK EXPERIENCE

SuperCam Science Team | Student Collaborator **05 2022 - Present**

- Working on Perseverance rover mission operations as a science Payload Uplink Lead (sPUL) for SuperCam, data validation of LIBS data for the Planetary Data System (PDS), and data interpretation. I specialize in analysis of Laser Induced Breakdown Spectroscopy (LIBS) data, plasma diagnostics, and visible reflectance spectra.

Jet Propulsion Laboratory | Research Assistant **06 2021 - 08 2021**

- Awarded a Summer Undergraduate Research Fellowship (SURF) at JPL/Caltech for the summer of 2021. Project proposal: using principal components analysis and spectral parameters to investigate passive spectra from the Curiosity Rover's ChemCam instrument. This project led to a poster presentation at the 2022 Lunar and Planetary Science Conference (LPSC) and a paper published in the *Journal of Geophysical Research: Planets* in 2023.

Princeton Plasma Physics Laboratory | Research Assistant **09 2017 - 06 2018**

- Developed the hardware and software to gather diagnostics for the Magnetorotational Instability Experiment (MRI) to better model astrophysical plasmas and understand the forces that shape accretion discs around black holes.

Nexus Aurora | Landing Zones and Mining Team Lead **03 2020 - 09 2021**

- Led the Landing Zones group in determining suitable locations on Mars for settlement as part of Nexus Aurora's winning submission to the Mars Society's "Mars City State" design competition. Co-wrote Nexus Aurora's entry to the Mars City State Design Competition where, out of 176 entries, we won 10,000 USD and first place. Presented at the Mars Society's annual conference in 2020.

TEACHING EXPERIENCE

Columbia University Dept. of Earth & Enviro. Eng. | Teaching Assistant **01 2022 - 05 2022**

- Helped to build the curriculum for and grade projects/exams for the course "EAEE 4262: Space Exploration and Mining". Held office hours and review sessions. Created lesson plans and ran discussion sessions.

Columbia University Dept. of Mathematics | Teaching Assistant **09 2020 - 12 2020**

- Graded exams and held office hours for the course "MATH 1102: Calculus II". Ran review sessions before exams.

SKILLS & INTERESTS

Languages: English (Native), German (B2), Mandarin (B1), Polish (B1)
Technical: Python (Pandas, Numpy, Sci-kit learn), JMARS, Java, Arduino IDE/C++, QGIS
Citizenship: United States, Austria

PUBLICATIONS

H. T. Manelski, R. Y. Sheppard, A. A. Fraeman, R. C. Wiens, J. R. Johnson, E. B. Rampe, J. Frydenvang, N. L. Lanza, O. Gasnault. (2023). Compositional variations in sedimentary deposits in Gale Crater as observed by ChemCam passive and active spectra. *Journal of Geophysical Research: Planets*, 128, e2022JE007706. https://doi.org/10.1029/2022JE007706

H. T. Manelski, R. C. Wiens, S. Schröder, P. B. Hansen, B. Bousquet, N. Martin, S. Clegg. LIBS Plasma Diagnostics with SuperCam on Mars. Lunar and Planetary Science Conference 2024, The Woodlands, TX.

H. T. Manelski, R. Y. Sheppard, A. A. Fraeman, R. C. Wiens, J. R. Johnson, E. B. Rampe, J. Frydenvang, N. L. Lanza, O. Gasnault. Variability in Mt. Sharp Group Bedrock as seen by ChemCam Passive and Active Spectra. Lunar and Planetary Science Conference 2023, The Woodlands, TX.

H. T. Manelski, R. Y. Sheppard, A. A. Fraeman, J. R. Johnson, R. Wiens, N. Lanza, J. Frydenvang. Classification of ChemCam passive spectral targets in Gale crater. Lunar and Planetary Science Conference 2022, The Woodlands, TX.

C. C. Bedford, C. Royer, R. C. Wiens, J. R. Johnson, B. H. N. Horgan, A. Broz, O. Forni, S. Connell, L. Mandon, B. S. Kathir, E. M. Hausrath, A. Udry, J. M. Madariaga, E. Dehouck, R. B. Anderson, P. Beck, O. Beyssac, É. Clave, S. M. Clegg, E. Cloutis, T. Fouchet, T. S. J. Gabriel, B. J. Garzynski, A. Klidaras, **H. T. Manelski,** L. Mayhew, J. Nuñez, A. M. Ollila, S. Schröder, J. Bell, J. I. Simon, U. Wolf, K. M. Stack, A. Cousin, S. Maurice. Discovery of Light-toned Float Rocks in Jezero Crater: A Tale of Aqueous Alteration and High-temperature Metamorphism. Lunar and Planetary Science Conference 2024, The Woodlands, TX.

W. Rapin, S. Maurice, A. Ollila, R. C. Wiens, B. Dubois, T. Nelson, L. Bonhomme, Y. Parot, S. Clegg, R. Newell, L. Ott, B. Chide, V. Payre, C. Bedford, S. Connell, **H. Manelski,** S. Schröder, M. Buder, C. Yana, P. Bousquet. µLIBS: Developing a Lightweight Elemental Micro-Mapper for In Situ Exploration. Lunar and Planetary Science Conference 2024, The Woodlands, TX.

O. Forni, C. C. Bedford, C. Royer, Y. Liu, R. C. Wiens, E. Dehouck, P-Y. Meslin, A. Udry, O. Beyssac, T. S. Gabriel, P. Beck, O. Gasnault, C. Quantin-Nataf, J. R. Johnson, S. Schröder, P. Pilleri, **H. T. Manelski,** B. C. Clarck, A. Cousin, S. Maurice, S. M. Clegg. Nickel-Copper Deposits on Mars? Discovery of Ore-Grade Abundances, and Implications on Formation and Alteration. Lunar and Planetary Science Conference 2024, The Woodlands, TX.

M. M. Sori, K. L. Laferriere, K. S. Burkman, J. Herring, A. Klidaras, **H. T. Manelski,** R. A. McGlasson, S. M. Menten, I. F. Pamerleau, S. L. Pérez-Cortés. Hollows as a Source for Mercury's Polar Organics. Lunar and Planetary Science Conference 2023, The Woodlands, TX.

O. Mikulskytė, J. Kingsworth, **H. T. Manelski,** Luka Pikulic, J. Rothenbuchner. Science Objectives of the Tumbleweed Mission-Swarm Based Wind Driven Rover Mars Exploration. Lunar and Planetary Science Conference 2023, The Woodlands, TX.

Mars City States - New Societies for a New World Chapter 20: Nexus Aurora - Mars City State Design