Cara A. Pesciotta

225 Olin Hall, 3400 N. Charles St., Baltimore, MD 21218
cpescio1@jhu.edu ♦ linkedin.com/in/cara-pesciotta/

EDUCATION

Johns Hopkins University, Baltimore, MD — Expected 2027
Ph.D. in Earth and Planetary Science

♦ Advisor: Sarah M. Hörst, Ph.D.

♦ Relevant Coursework: Physics and Chemistry of Aerosols, Spectroscopic Methods of Organic Structure Determination, Exoplanets and their Atmospheres, Planetary Atmospheres, Surfaces, and Interiors

Northeastern University, Boston, MA — May 2022
B.S. in Physics, Minor in Mathematics

♦ Summa Cum Laude

♦ Relevant Coursework: Advanced Astrophysical Topics, General Relativity & Cosmology, Quantum Mechanics, Thermodynamics, Modern Physics, Electricity & Magnetism, Fourier Series & PDEs, Differential Equations, Linear Algebra, Multivariable Calculus, General Chemistry with Lab

RESEARCH EXPERIENCE

Harvard-Smithsonian Center for Astrophysics, Cambridge, MA — July 2021 – Present
Undergraduate Researcher, Öberg Astrochemistry Group

♦ Lead project to understand entrapment of CO in thick H_2O and CO_2 ices by analyzing infrared and mass spectrometry data during temperature-programmed desorption

♦ Assist in building novel experimental setup designed to transport icy grain samples, problem-solving complications and making precise alignments

CERN CMS Experiment, Geneva, Switzerland — July – December 2020
Particle Physics Research Co-op, Advisor Louise Skinnari

♦ Upgraded the particle identification algorithm in the CMS L1 Track Trigger to increase efficiency and prepare for the High-Luminosity LHC

♦ Wrote and edited scripts in Python and C++ to conduct performance studies and generate plots for proton and muon collision Monte Carlo simulations

♦ Presented progress to general and technical audiences over 6 talks and collaborated with scientists from national and international institutions

MIT and Harvard University, Cambridge, MA — October 2019 – May 2022
Junior Researcher, Advisor Clara Sousa-Silva

♦ Compiled the most accurate high-temperature spectra of phosphine to use in the detection of life on other planets utilizing wavenumber and quantum number data from over 20 research papers

♦ Worked extensively with MARVEL, a program to calibrate theoretical spectra to yield high-accuracy cross-sections, Excel, and Python to analyze and standardize large data sets

PUBLICATIONS

Pesciotta, C., Simon, A., Rajappan, M., Öberg, K.I. (in press). Entrapment in CO2 and H2O Ices: Impact of Ice Matrix Thickness. *The Astrophysical Journal.*

Pearce, B.K.D., Hörst, S.M., Cline, C.J., Cintala, M.J., He, C., Sebree, J.A., MacKenzie, S.M., Daly, R.T., Pontefract, A.J., **Pesciotta, C.** (2024) Towards Prebiotic Chemistry on Titan: Impact experiments on organic haze particles. *Planetary Science Journal,* 5, 68.

CONFERENCE PRESENTATIONS

Pesciotta, C., Hörst, S.M., and He, C. *Exoplanet Hazes and their Interactions with Liquid Surface Water*, poster presentation. DPS, San Antonio, TX. Oct. 2023.

Pesciotta, C., Hörst, S.M., and He, C. *Hazes and Habitability: The Interaction Between Atmospheric Haze and Liquid Surface Water*, poster presentation. ExSS, Christchurch, NZ. Mar. 2024.

Pesciotta, C., Hörst, S.M., and He, C. *Prebiotic Chemistry from Hydrolyzing Exoplanet Haze Analogs*, poster presentation. AbSciCon, Providence, RI. May 2024.

Pesciotta, C., Hörst, S.M., and He, C. *Prebiotic Chemistry from Hydrolyzing Titan and Exoplanet Haze Analogs*, talk. AbGradCon, Providence, RI. May 2024.

Huseby, L., Moran, S.E., Pearson, N., Kataria, T., He, C., Hörst, S.M., **Pesciotta, C.**, Marley, M., Reddy, V. *Effects of UV Radiation on Sub-Neptune Hazes Through Laboratory Experiments*, oral presentation. AAS, New Orleans, LA. Jan. 2024.

Austin, C.E., Yu, X., White, E., He, C., Sciamma-O'Brien, E., Sebree, J.A., **Pesciotta, C.**, Bond, C.R., Hörst, S.M., Salama, F., McGuiggan, P. *Cross-laboratory Comparative Study of Titan's Haze Analogs: Characterizing Surface Energy of Tholin Samples.* LPSC, Houston, TX. Mar. 2024.

Pearce, B.K.D., Hörst, S.M., Cline, C.J., Cintala, M.J., He, C., Sebree, J.A., MacKenzie, S.M., Daly, R.T., Pontefract, A.J., **Pesciotta, C.** *Shock Experiments to Inform Dragonfly about Prebiotic Chemistry on Titan.* AbSciCon, Providence, RI. May 2024.

TEACHING EXPERIENCE

Planetary Seminar, AS.270.662, Johns Hopkins University Fall 2023
Teaching Assistant

LEADERSHIP / ACTIVITIES / VOLUNTEER WORK

JHU EPS Outreach Committee, Baltimore, MD August 2022 – Present
Member

♦ Design volunteer opportunities for members of the department to develop science communication skills by connecting with the greater Baltimore community

♦ Oversee content and maintenance of the department Twitter page to promote collaboration between universities and publicize departmental events and science

NUSci Magazine, Boston, MA July 2019 – May 2022
Writer & Editor (nuscimagazine.com/author/cara-pesciotta)

♦ Author of 11 articles related to fields like mathematics, ecology, and astronomy both in print and online

♦ Edit up to 8 articles per semester, working with a variety of topics, styles, and writers to achieve best possible product

Strong Women Strong Girls, Boston, MA September 2019 – May 2022
Mentor and Site Leader

♦ Organize and facilitate weekly mentoring sessions for Boston Public School girls grades 3-5

♦ Facilitate conversations about diversity and inclusion by presenting role models in science, sports, advocacy, and more

♦ Work with parents and staff to ensure a safe and learning-conducive environment for approx. 10 girls per semester

PROFESSIONAL AFFILIATIONS

American Geophysical Union

Division for Planetary Sciences of the American Astronomical Society

SKILLS AND INTERESTS

♦ Computer Programming: Familiar with Python, C++, Java, MATLAB, Mathematica, LaTeX, ROOT, Linux, MARVEL, Microsoft Excel

♦ Laboratory Skills: IR spectrometry, quadrupole mass spectrometry

♦ Languages: Conversational Italian and Spanish

♦ Interests: science communication and policy, mentoring kids, travel, hiking, baking, voice & piano