Jennifer Mead

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Education

2020–2026*	**Ph.D.**, Astronomy, *Columbia University* *Advisors: Greg Bryan, Mordecai-Mark Mac Low, & Melissa Ness*
2020–2023	**M.Phil.**, Astronomy, *Columbia University*
2020–2022	**M.A.**, Astronomy, *Columbia University*
2013–2019	**B.S.**, Astrophysics, Mathematics, & Economics, *Rutgers University*

Awards & Honors

2022-2026	NSF Graduate Research Fellowship ($144,000)
2023-2025	National Osterbrock Leadership Fellow ($8,000)

Publications

Journal Articles

1. Andersson, E. P., Rey, M. P., Yates, R. M., Read, J. I., Agertz, O., Ji, A. P., **Mead, Jennifer**, Brauer, K. & Mac Low, M.-M. EDGE-INFERNO: How chemical enrichment assumptions impact the individual stars of a simulated ultra-faint dwarf galaxy. *A&A* **707,** A112. https://ui.adsabs.harvard.edu/abs/2026A&A...707A.112A (Mar. 2026).
2. Ness, M. K., Aquilina, S., **Mead, Jennifer**, Griffith, E., Manea, C., Bird, J., Casey, A. R., Lu, L., Johnston, K. V., Blanton, M. R., Johnson, J. W., Jablonska, M., Carigi, L., Fernández-Trincado, J. G., López Valdivia, R., Song, Y.-Y. & Kollmeier, J. Milky Way Mapper decoded abundances II. From patterns to paths. *MNRAS* **550,** 960. https://ui.adsabs.harvard.edu/abs/2026MNRAS.550ag960N (July 2026).
3. Ness, M. K., Aquilina, S., **Mead, Jennifer**, Griffith, E., Manea, C., Bird, J., Casey, A. R., Lu, L., Johnston, K. V., Blanton, M. R., Johnson, J. W., Jablonska, M., Carigi, L., Fernández-Trincado, J. G., Valdivia, R. L., Song, Y.-Y. & Kollmeier, J. Milky Way Mapper decoded abundances I. Shared disc enrichment patterns. *MNRAS* **548,** 637. https://ui.adsabs.harvard.edu/abs/2026MNRAS.548ag637N (June 2026).
4. Brauer, K., Emerick, A., **Mead, Jennifer**, Ji, A. P., Wise, J. H., Bryan, G. L., Mac Low, M.-M., Côté, B., Andersson, E. P. & Frebel, A. AEOS: Star-by-star Cosmological Simulations of Early Chemical Enrichment and Galaxy Formation. *ApJ* **980,** 41. https://ui.adsabs.harvard.edu/abs/2025ApJ...980...41B (Feb. 2025).
5. Brauer, K., **Mead, Jennifer**, Wise, J. H., Bryan, G. L., Low, M.-M. M., Ji, A. P., Emerick, A., Andersson, E. P., Frebel, A. & Côté, B. AEOS: The Impact of Population III Initial Mass Function and Star-by-star Models in Galaxy Simulations. *ApJ* **993,** 2. https://ui.adsabs.harvard.edu/abs/2025ApJ...993...2B (Nov. 2025).
6. Hazlett, R., **Mead, Jennifer**, Visbal, E., Bryan, G. L., Mac Low, M.-M., Kulkarni, M., Andersson, E. P., Brauer, K. & Wise, J. H. From Primordial Stars to Early Galaxies: A Semi-Analytic Model Calibrated with Aeos and Renaissance. *ApJ* **submitted.** https://ui.adsabs.harvard.edu/abs/2025arXiv251011629H (Oct. 2025).
7. Krumholz, M. R., Ting, Y.-S., Li, Z., Zhang, C., **Mead, Jennifer** & Ness, M. K. Metallicity fluctuation statistics in the interstellar medium and young stars – II. Elemental cross-correlations and the structure of chemical abundance space. *OJAp* **8.** https://ui.adsabs.harvard.edu/abs/2025arXiv250714572K (Nov. 2025).

*Expected.

8. **Mead, Jennifer**, Brauer, K., Bryan, G. L., Mac Low, M.-M., Ji, A. P., Wise, J. H., Andersson, E. P., Frebel, A., Emerick, A. & Côté, B. Aeos is Mixing it Up: The (In)homogeneity of Metal Mixing Following Population III Star Formation. *ApJ* **submitted.** https://ui.adsabs.harvard.edu/abs/2025arXiv250913580M (Sept. 2025).
9. **Mead, Jennifer**, Brauer, K., Bryan, G. L., Mac Low, M.-M., Ji, A. P., Wise, J. H., Emerick, A., Andersson, E. P., Frebel, A. & Côté, B. AEOS: Transport of Metals from Minihalos following Population III Stellar Feedback. *ApJ* **980,** 62. https://ui.adsabs.harvard.edu/abs/2025ApJ...980...62M (Feb. 2025).
10. **Mead, Jennifer**, De La Garza Evia, R. & Ness, M. K. Four Elements to Rule Them All: Abundances Are Rigidly Coupled in the Milky Way Disk. **994,** 52. https://ui.adsabs.harvard.edu/abs/2025ApJ...994...52M (Nov. 2025).
11. **Mead, Jennifer**, Ness, M., Andersson, E., Griffith, E. J. & Horta, D. Measuring Dwarf Galaxy Intrinsic Abundance Scatter with Mid-resolution Spectroscopic Surveys: Calibrating APOGEE Abundance Errors. *ApJ* **974,** 186. https://ui.adsabs.harvard.edu/abs/2024ApJ...974..186M (Oct. 2024).
12. Sanchez, N. N., Werk, J. K., Christensen, C., Telford, O. G., Quinn, T. R., Tremmel, M., **Mead, Jennifer**, Sharma, R. S. & Brooks, A. M. The Scatter Matters: Circumgalactic Metal Content in the Context of the M–σ Relation. *ApJ* **967,** 100. https://ui.adsabs.harvard.edu/abs/2024ApJ...967..100S (June 2024).

Presentations

Invited Talks

1. *The Chemical Record: Elements of Galactic Memory.* CCAPP Seminar (The Ohio State University, Columbus, OH, USA). Sept. 2025.
2. *The Chemical Record: Elements of Galactic Memory.* ISM, Stars, and Planets Seminar (The University of Texas at Austin, Austin, TX, USA). Sept. 2025.
3. *The First Stars: A Journey Across Cosmic Time.* AMNH Astronomy Seminar (American Museum of Natural History, New York, NY, USA). May 2024.

Contributed Talks

1. *In and Out: Transporting metals out of halos and into the first enriched stars following Population III stellar feedback.* The Formation of the Earliest Cosmic Structures from a Joint Observational and Theoretical Perspective (Cosmic Frontier Center, Austin, TX, USA). May 2025.
2. *Metal Mixing in the Early ISM: Chemical Abundances of the First Enriched Stars.* American Astronomical Society Meeting #245 (National Harbor, MD, USA). Jan. 2025.
3. *Effects of Population III supernovae on the formation of the first enriched stars.* Recipes to Regulate Star Formation at All Scales (Space Telescope Science Institute, Baltimore, MD, USA). Apr. 2024.
4. *Enriching the first galaxies with the first stars: the first steps of chemical evolution.* American Astronomical Society Meeting #243 (New Orleans, LA, USA). Jan. 2024.
5. *First Steps of Chemical Evolution in the First Galaxies.* First Stars VII (Center for Computational Astrophysics, New York, NY, USA). May 2024.
6. *Kicking Off Chemical Evolution with the First Stars.* Connecting Simulations and Observations in 3D Across Cosmic Time (Barossa Valley, SA, Australia). June 2024.
7. *Transporting metals inside and out of minihalos following Population III stellar feedback.* Origins Workshop (Center for Computational Astrophysics, New York, NY, USA). Dec. 2024.
8. *Imprints of the first generations of stars: intrinsic scatter in dwarf galaxies.* Galactic Frontiers: Dwarf Galaxies in the Local Volume and Beyond (Center for Computational Astrophysics, New York, NY, USA). July 2023.

9. *Early chemical enrichment of dwarf galaxies in star-by-star cosmological simulations.* American Astronomical Society Meeting #240 (Pasadena, CA, USA). June 2022.
10. *Early chemical enrichment of dwarf galaxies in Aeos.* L2G2 Regional Meeting (Center for Computational Astrophysics, New York, NY, USA). Nov. 2021.
11. *Early chemical enrichment of dwarf galaxies in star-by-star cosmological simulations.* SAZERAC SIP. Oct. 2021.

Posters

1. *Enriching the first galaxies with the first stars: the first steps of chemical evolution.* First Light (MIT, Cambridge, MA, USA). June 2023.
2. *Galaxy Gradients Across Simulations.* American Astronomical Society Meeting #233 (Seattle, WA, USA). Jan. 2019.

Teaching & Pedagogy

Columbia University

2020-2021	**Teaching Assistant**; Earth, Moon, and Planets *(Non-Major)*
2022, 2023	**Instructor**; Astronomy Lab II *(Non-Major)*
2022-2023	**Head TA**; Department of Astronomy
2023	**Teaching Assistant**; Modeling the Universe *(Graduate & Major)*
2022-2023	**Lead Teaching Fellow**; Center for Teaching and Learning *(Astronomy Department)*
2023-2024	**Senior Lead Teaching Fellow**; Center for Teaching and Learning

Academic Advising

Undergraduate

2023–2026	Rebeca De La Garza, Columbia University, Department of Statistics
2025–	Sophie Mertzel, Barnard College, Department of Physics and Astronomy

Academic Service

Outreach and Department Programming

2022–2026	Teaching Tea/CommuniVerse *(Columbia University, Department of Astronomy)*
2023	Astronomy on Tap: *Tales from the Stellar Graveyard: The Ghosts of Stars Past*
2023	Columbia Public Lecture: *Tales from the Stellar Graveyard: The Ghosts of Stars Past*
2023–2024	Graduate Representative, Graduate Curriculum Revision Committee *(Columbia University, Department of Astronomy)*
2024	Eclipse Lecture Series *(New York Public Library System)*
2025–	Reading the Night Sky Workshops *(New York Public Library & Hunterdon County Library Systems)*
2025	Columbia Public Lecture: *Telescopes: Our Eyes on the Universe*

Journal Reviewer

2025	Open Journal of Astrophysics