

Dr Jessica Sutter

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SUMMARY

Observational extragalactic astronomer with a focus on understanding energy transport through a multi-phase interstellar medium and developing engaging teaching experiences for learners of all experience levels.

WORK EXPERIENCE

Postdoc Fellow: Center for Astrophysics and Space Science, UCSD Sept 2022 - present

Worked with the first results of the Physics at High Angular Resolution in Nearby Galaxies (PHANGS) JWST survey to map and study properties of the smallest dust grains

Postdoc Fellow: SOFIA Science Center at NASA Ames May 2021 - Aug 2022

Analyzed SOFIA FIFI-LS data, processed large [CII] emission maps of nearby galaxies, updated the SOFIA archive user experience

Visiting Astronomy Professor: Whitman College Aug 2020 - Dec 2020

Taught introductory astronomy for non-majors and galactic astronomy for majors

Graduate Researcher: University of Wyoming Aug 2015 - May 2021

- Dissertation research focused on the causes and consequences of the [CII] deficit
- Worked as a teaching assistant and instructor of record in astronomy and physics courses
- Mentor for the Learning Actively Mentoring Program (LAMP) summer institutes
- Helped to develop and updated lab manual for introductory physics courses

PROJECTS

PHANGS-JWST

Analysis of the spatially resolved small dust grain emission in a sample of nearby galaxies observed as part of the PHANGS JWST program and comparisons of these emissions to ionized gas traced by $H\alpha$, cold gas traced by CO, and star cluster properties

Ionized Carbon in Nearby Galaxies (ICING)

By processing archival maps of [CII] 158 μm emission, I have begun to assess how this important far-infrared line diagnostic can be used to understand galaxy evolution across cosmic time. To do this, I compare this emission to the distribution of atomic and molecular hydrogen, dust, and galaxy structure.

Active Learning Pedagogy

I have been working to create novel learning experiences for introductory and major astronomy and physics courses that allow students to engage in the research process, providing opportunities for everyone to experience what working as a scientist involves.

EDUCATION

2015 - 2021 PhD in physics with an astronomy concentration at **University of Wyoming** (GPA: 3.930)

2011 - 2015 Bachelor of Arts in physics and astronomy at **Whitman College** (GPA: 3.632)

PUBLICATIONS

Dale, Daniel A. et al. (Nov. 2019). "Asking Real-World Questions with Inquiry-Based Labs". In: *The Physics Teacher* 57.8, pp. 547–550. DOI: [10.1119/1.5131122](https://doi.org/10.1119/1.5131122).

- Sutter, Jessica, Daniel A. Dale, Kevin V. Croxall, et al. (Nov. 2019). “Using [C II] 158 μm Emission from Isolated ISM Phases as a Star Formation Rate Indicator”. In: 886.1, 60, p. 60. DOI: [10.3847/1538-4357/ab4da5](https://doi.org/10.3847/1538-4357/ab4da5). arXiv: [1910.05416](https://arxiv.org/abs/1910.05416) [[astro-ph.GA](#)].
- Sutter, Jessica (Oct. 2020). “Expanding minds through explorations of our expanding universe”. In: *The Physics Teacher* 58.7, pp. 520–521. DOI: [10.1119/10.0002079](https://doi.org/10.1119/10.0002079).
- Sutter, Jessica, Daniel A. Dale, Karin Sandstrom, et al. (May 2021). “The case for thermalization as a contributor to the [C II] deficit”. In: 503.1, pp. 911–919. DOI: [10.1093/mnras/stab490](https://doi.org/10.1093/mnras/stab490). arXiv: [2102.08865](https://arxiv.org/abs/2102.08865) [[astro-ph.GA](#)].
- Chastenet, Jérémy and Sutter et al. (Dec. 2022). “PHANGS-JWST First Results: Measuring PAH Properties across the multiphase ISM”. In: *arXiv e-prints*, arXiv:2212.10512, arXiv:2212.10512. arXiv: [2212.10512](https://arxiv.org/abs/2212.10512) [[astro-ph.GA](#)].
- Sutter, Jessica and Dario Fadda (Feb. 2022). “[C II] Map of the Molecular Ring and Arms of the Spiral Galaxy NGC 7331”. In: 926.1, 82, p. 82. DOI: [10.3847/1538-4357/ac4252](https://doi.org/10.3847/1538-4357/ac4252). arXiv: [2112.05706](https://arxiv.org/abs/2112.05706) [[astro-ph.GA](#)].
- Chastenet, Jérémy and Sutter et al. (Jan. 2023). “PHANGS-JWST First Results: Variations in PAH Fraction as a Function of ISM Phase and Metallicity”. In: *arXiv e-prints*, arXiv:2301.00578, arXiv:2301.00578. arXiv: [2301.00578](https://arxiv.org/abs/2301.00578) [[astro-ph.GA](#)].

SKILLS

Python Programming	Adept at programming in python, with speciality in analyzing astronomical data
Proposal Writing	Written telescope proposals for SOFIA, ALMA, and JWST observations as well as grant and fellowships.
Mentoring	Mentored undergraduate students as part of the Wyoming REU and the NASA summer internship program
Developing Curriculum	Created new learning activities for introductory and major astronomy courses, designed labs for introductory physics courses