

Matthew C. De Furio

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Positions

NSF Astronomy and Astrophysics Postdoctoral Fellow – UT Austin Sept 2023 - Present

Education

University of Michigan (UM) – Ann Arbor September 2019 - August 2023

PhD: Astronomy & Astrophysics

University of Michigan – Ann Arbor September 2017 - August 2019

MS: Astronomy & Astrophysics

University of Florida (UF) September 2012 - December 2016

BS (Summa cum Laude): Physics, Astronomy, Minor: Mathematics

Publications

First Author:

7. De Furio, M., Ygouf, M., Greenbaum, A., Rocha, G., Meyer, M.R., Beichman, C., Roudier, G., Sallum, S., Skemer, A., “Optimizing Detection and Characterization of Exoplanets in High-contrast Imaging Data”, re-submitted to ApJ.

6. De Furio, M., Lew, B., Beichman, C., Roellig, T., Greene, T., et al., “JWST Observations of the Enigmatic Y Dwarf WISE 1828+2650: I. Limits to a Binary Companion”, 2023, ApJ, 948, 92D.

5. De Furio, M., Liu, C., Meyer, M.R., Reiter, M., Kraus, A., Dupuy, T., Monnier, J., “Demographics of the M-star Multiple Population in the Orion Nebula Cluster”, 2022c, ApJ, 941, 161.

4. De Furio, M., Gardner, T., Monnier, J., Meyer, M.R., Kratter, K., Schaefer G., Anugu, N., Davies, C.L., Kraus, S., Lanthermann, C., Le Bouquin, J.B., Ennis, J., “The Small Separation A-Star Companion Population: First Results with CHARA/MIRC-X”, 2022b, ApJ, 941, 118.

3. De Furio, M., Meyer, M.R., Reiter, M., Monnier, J., Kraus, A., & Dupuy, T., “Binary Formation in the Orion Nebula Cluster: Exploring the Sub-stellar Limit.” 2022a, ApJ, 925, 112.

2. De Furio, M., Reiter, M., Meyer, M.R., Greenbaum, A., Dupuy, T., Kraus, A., “A Search for Intermediate-separation Low-mass Binaries in the Orion Nebula Cluster.” 2019, ApJ, 886, 95D.

1. De Furio, M., Ahn, S.J., Burne, R.A., Hagen, S.J. “Oxidative Stressors Modify the Response of *Streptococcus mutans* to Its Competence Signal Peptides.” 2017, Applied Environmental Microbiology, 83.

Publications with Significant Contributions:

2. Fontanive, C., Bedin, L., **De Furio, M.**, Biller, B., Anderson, J., Bonavita, M., Allers, K., Pantoja, B., “An HST survey of 33 T8 to Y1 brown dwarfs: NIR photometry and multiplicity of the coldest isolated objects”, MNRAS, 526, 1783F.

1. Calissendorf, P., **De Furio M.**, et al., “JWST/NIRCam discovery of the first Y+Y brown dwarf binary: WISE J033605.05-014350.4”, ApJ, 947L, 30C.

Other Co-authored Publications:

12. Petrus, S., Whiteford, N., Patapis, P., et al. **(including De Furio M.)**, “The JWST Early Release Science Program for Direct Observations of Exoplanetary Systems V: Do Self-Consistent Atmospheric Models Represent JWST Spectra? A Showcase With VHS 1256 b”, 2023, arXiv:2312.03852.
11. Ray, S., Sallum, S., Hinkley, S., et al. **(including De Furio M.)**, “The JWST Early Release Science Program for Direct Observations of Exoplanetary Systems III: Aperture Masking Interferometric Observations of the star HIP 65426 at $3.8\mu\text{m}$ ”, 2023, arXiv: 2310.11508.
10. Sallum, S., Ray, S., Kammerer, J., et al. **(including De Furio M.)**, “The JWST Early Release Science Program for Direct Observations of Exoplanetary Systems IV: NIRISS Aperture Masking Interferometry Performance and Lessons Learned”, 2023, arXiv:2310.11499.
9. Cugno, G., Zhou, Y., Thanathibodee, T., Calissendorff, P., et al. **(including De Furio M.)**, “MagAO-X and HST High-contrast Imaging of the AS209 Disk at $H\alpha$ ”, 2023, 166, 162C.
8. Lawson, K., Schlieder, J., Leisenring, J., Bogat, E., et al., **(including De Furio M.)**, “JWST/NIRCam Coronagraphy of the Young Planet-hosting Debris Disk AU Microscopii”, 2023, AJ, 166, 150L.
7. Greenbaum, A., Llop-Sayson, J., Lew, B., Bryden, G., Roellig, T., et al., **(including De Furio M.)**, 2023, “First Observations of the Brown Dwarf HD 19467 B with JWST”, 2023, ApJ, 945, 126.
6. Kammerer J., Cooper R.A., Vandal T., Thatte D., Martinache F., Sivaramakrishnan A., Chaushev A., et al., **(including De Furio M.)**, 2022, “The Near Infrared Imager and Slitless Spectrograph for JWST -- V. Kernel Phase Imaging and Data Analysis ”, 2023, PASP, 135, 014502.
5. Sivaramakrishnan, A., Tuthill, P., Lloyd, J., Greenbaum, A., et al., **(including De Furio M.)** 2022, “The Near Infrared Imager and Slitless Spectrograph for the James Webb Space Telescope -- IV. Aperture Masking Interferometry” 2023, PASP, 135, 015003.
4. Miles B.E., Biller B.A., Patapis P., Worthen K., Rickman E., Hoch K.K.W., Skemer A., et al., **(including De Furio M.)** 2022, “The JWST Early Release Science Program for Direct Observations of Exoplanetary Systems II: A 1 to 20 Micron Spectrum of the Planetary-Mass Companion VHS 1256-1257 b”, 2023, ApJL, 946, L6.
3. Carter A.L., Hinkley S., Kammerer J., Skemer A., Biller B.A., Leisenring J.M., Millar-Blanchaer M.A., et al. **(including De Furio M.)**, 2022, “The JWST Early Release Science Program for Direct Observations of Exoplanetary Systems I: High Contrast Imaging of the Exoplanet HIP 65426 b from $2\text{-}16\mu\text{m}$ ”, ApJ, 951L, 20C.
2. Hinkley S., Carter A.L., Ray S., Skemer A., Biller B., Choquet E., Millar-Blanchaer M.A., et al. **(including De Furio M.)**, “The JWST Early Release Science Program for the Direct Imaging and Spectroscopy of Exoplanetary Systems”, 2022, PASP, 134, 095003.
1. Ygouf, M., Rocha, G., Beichman, C., Greenbaum, A., Leisenring, J., **De Furio, M.**, Meyer, M., et al., “Data processing for high-contrast imaging with the James Webb Space Telescope”, 2020, SPIE, Volume 11443.

Observing Programs

Principal Investigator or co-Principal Investigator:

- Hubble Space Telescope:

- 7 orbits in Cycle 30 (**\$134,000**), GO 17141
- Approved archival program Cycle 31, AR 17561

- NASA/Keck - One night in 2023B with NIRC2-LGS (\$13,750**)**

- NSF's NOIRLab:

- Six nights at CHARA in 2020B and 2023B with MIRC-X/MYSTIC
- 22.4 hours at Gemini-N/S 'Alopeke/Zorro in 2023B

- CHARA Consortium - Four nights at CHARA in 2022A with MIRC-X/MYSTIC

Co-Investigator:

- James Webb Space Telescope - Cycle 1 (GO 2473, 2627), Cycle 2 (GO 3840, 3907, 4147), total of 71.46 hours

- Hubble Space Telescope:

- 3 orbits in Cycle 30 Mid-Cycle, GO 17283
- 4 orbits in Cycle 31, GO 17466

- Magellan - One night with MIKE in 2021B, One night with MagAO-X in 2022A

Selected Presentations

- 2024 Invited Talk: 243rd AAS Meeting, Optical Long Baseline Interferometry: Your Next Essential Research Tool
- 2024 Contributed Talk: 243rd AAS Meeting, NSF Fellows Symposium
- 2023 Contributed Talk: Two in a million - The interplay between binaries and star clusters, ESO Garching
- 2023 Protostars and Planets VII. Kyoto, Japan.
- 2023 Contributed Talk: 2023 CHARA Science Meeting
- 2023 Invited Talk: Chalmers Astrophysics Colloquium, Origins Seminar at U. Virginia
- 2023 Contributed Talk: 241st Meeting of the American Astronomical Society
- 2022 Invited Talk: CalTech/IPAC Seminar Series
- 2022 Cool Stars 21. Toulouse, France.
- 2022 Contributed Talk: [The Sharpest Eyes on the Sky](#)
- 2021 Contributed Talk: 237th Meeting of the American Astronomical Society
- 2021 Contributed Talk: Cool Stars 20.5
- 2021 Star Formation: From Clouds to Disks: A Tribute to the Career of Lee Hartmann.
- 2021 RTD/SURP Research Poster Conference at NASA Jet Propulsion Laboratory
- 2019 Invited Talk: The University of Florida
- 2019 Contributed Talk: Understanding the Nearby Star-forming Universe with JWST
- 2019 233rd Meeting of the American Astronomical Society
- 2016 227th Meeting of the American Astronomical Society

Advising and Teaching

- **Mentor** of Mark Giovinazzi, Astronomy Mentorship Program for Upcoming Postdocs 2023
- **Supervisor** of Christopher Liu (undergraduate), UM 2020 - 2022
- **Mentor** of Autumn Cain (undergraduate) UM 2019
- **Graduate Student Instructor**, Astronomy 101, Introductory Astronomy 2018

Institutional Service

- **Time Allocation Committee**, UM 2022
- **Lead facilitator**, Stars, Planets, and Formation Group, UM 2021 - 2022
- **Local Organizing Committee**, JWST Proposal Workshop, UM 2020
- **Breakout Session Leader**, JWST Proposal Workshop, UM – Mosaics, NIRISS/AMI 2020
- **AAS Session Chair** 2020
- **Department Steward**, Graduate Employees' Organization, UM 2020 - 2022
- **Prospective Graduate Student Visit Organizer**, UM 2019 – 2020

Awards and Grants

- **NSF Astronomy and Astrophysics Postdoctoral Fellowship (\$330,000)** 2023 - Present
- **Rackham Predoctoral Fellowship, UM (\$37,000)** 2022 - 2023
- **Strategic University Research Partnership**, Jet Propulsion Laboratory 2021 - 2023
- **Rackham Travel Grant, UM (\$2,300)** 2018, 2023
- **Dorothy W. and Terry Smiljanich Outstanding Senior Thesis Award**, UF 2016
- **University Scholars Award**, UF 2015 - 2016
- **Center for Condensed Matter Sciences Undergraduate Fellowship**, UF 2015 - 2016
- **Florida Bright Futures Academic Scholar** 2012 - 2016

Professional Affiliations

- **JWST NIRCам Science Team**, Science lead for GTO Program 1190 of 12.8 hours
- **JWST NIRISS Science Team**, Member
- **JWST High Contrast Imaging Early Release Science Team**, Member
- **American Astronomical Society**, Full member