Drew Lapeer - Curriculum Vitae

(they/them)

University of Massachusetts, Department of Astronomy
LGRT B532A, 710 North Pleasant Street Amherst, MA 01003-9305

dlapeer@umass.edu or drew@giantmolecular.cloud
giantmolecular.cloud
lapeer

EDUCATION

University of Massachusetts, Amherst, MA *2024-*
PhD, MSc, Astronomy

University of Michigan, Ann Arbor, MI *2021-2024*
BSc, Astronomy & Astrophysics (Honors), Interdisciplinary Physics

Washtenaw Community College, Ann Arbor, MI *2022-2023*
General Studies

Macomb Community College, Macomb, MI *2019-2021*
General Studies

RESEARCH

Star Formation in Local Volume Galaxies with JWST NIRCam & MIRI *2024-*
University of Massachusetts, Advised by Prof. Daniela Calzetti

The primary aim of this work is to understand the star formation process in local volume galaxies using emerging young star clusters. Worked collaboratively as a member of the Feedback Feedback in Emerging extrAgalactic Star clusTers (FEAST) team on the topics of star cluster formation, evolution, feedback injection, and hierarchical structuring of the star formation process.

Dynamical Detection of SMBHs in Compact Galaxies with JWST NIRSpec IFU *2022-2024*
University of Michigan, Advised by Prof. Monica Valluri

This work focused on investigating the theoretical limits of JWST's NIRSpec IFU ability in detecting SMBHs in low mass, compact galaxies, and detecting SMBHs in these systems with NIRSpec IFU data. Used mock observations to probe the lowest mass SMBHs detectable with dynamical modeling methods (Schwarzschild and Jean's modeling) applied to NIRSpec IFU kinematics. Assisted in detection and mass estimation of SMBHs in comapct Virgo cluster galaxies.

PUBLICATIONS (NASA ADS)

h-index: *N* Citations: *N* 1st Author: *N* Co-Author:

† = submitted ‡ = in prep. †† = in press.

First & Second Author

- **Lapeer, D.**, Calzetti, D., Grasha, K., Adamo, A. et al., *Probing Hierarchical Star Formation with the Spatial Distributions of Emerging Young Star Clusters*, submitted to ApJ 2025 †
- **Lapeer, D.**, Calzetti D., Grasha, K. et al., *Investigating the Relationship between GMCs and Emerging Young Star Clusters in NGC 628*, in prep., to be submitted to ApJ in late 2025, early 2026 ‡
- Tahmasebzadeh, B., **Lapeer, D.**, Valluri, M., Vasiliev, E., Taylor, M.A., Thompson, S. 2024, '*Determining the Lower*

Limit of Central Black Hole Masses Detectable in Virgo UCDs/cEs using JWST NIRSpec IFU, The Astrophysical Journal, 974, 60

*N*th Author

- Pedrini, A. et al. (including **Lapeer, D.**), *Stochasticity matters: the near infrared SED of young star clusters in the FEAST galaxies*, submitted to ApJ †
- Bortolini, G. et al. (including **Lapeer, D.**), *FEAST: JWST/NIRCam view of the Resolved Stellar Populations of the Interacting Dwarf GalaxiesNGC 4485/NGC 4490*, accepted to ApJ †
- Calzetti, D. et al. (including **Lapeer, D.**), *Quantification of The Age Dependence of Mid–Infrared Star Formation Rate Indicators*, accepted to ApJ ††
- Buckner, A. et al. (including **Lapeer, D.**), *The Spatial Evolution of Star Clusters in NGC 628 with JWST*, submitted to MNRAS †
- Knutas, A. et al. (including **Lapeer, D.**), *FEAST: JWST uncovers the emerging timescales of young star clusters in M83* , accepted to ApJ ††
- Correnti, M. et al. (including **Lapeer, D.**), *FEAST: probing the stellar population of the starburst dwarf galaxy NGC4449 with JWST/NIRCam*, accepted to ApJ ††
- Taylor, M. et al. (including **Lapeer, D.**), *A Supermassive Black Hole in a Diminutive Ultra-compact Dwarf Galaxy Discovered with JWST/NIRSpec+IFU* , submitted to ApJ, available on arXiv †

INVITED (†) & CONTRIBUTED TALKS

- † **D. Lapeer et al.**, *Local Universe Star Formation with FEAST*, Weber University Lunch Seminar, invited for Winter 2026
- † **D. Lapeer et al.**, *Probing Hierarchical Star Formation with Emerging Star Clusters*, University of Kansas, Fall 2025
- **D. Lapeer et al.**, *Dynamically Detecting SMBHs in Compact Galaxies with JWST NIRSpec IFU*, Student Astronomical Society Research Talks, University of Michigan, Fall 2023

CONFERENCE POSTERS

- **D. Lapeer et al.**, *Probing the Lower Limits of Detectable Black Hole Mass with JWST NIRSpec IFU Kinematics*, American Astronomical Society 243 Winter Meeting, New Orleans, LA, Winter 2023
- **D. Lapeer et al.**, *How Low Can You Go? Lower Limits of Recoverable SMBH Mass in Virgo Cluster UCDs from JWST NIRSpec IFU Data*, Great Lakes Clusters and Streams Conference, Ann Arbor, MI, Summer 2023

FELLOWSHIPS & AWARDS

Walter W. Wada Award for Community Engagement, Department of Physics, University of Michigan (*$800*) *2024*

TEACHING

Research Experience in Astronomy for Teachers (Lab Lead, Grad. Instructor) *Summer 2025*

Taught a several week long course for K-12 public school teachers in Springfield, MA alongside Prof. Daniela Calzetti and undergraduates Jeremy Sun and Catherine McCaffery. Throughout the course, teachers learn about astronomy, with a focus on teaching methods applicable to K-12 education. Ran several lab sessions focused on teaching participants the basics of astronomical science techniques and their use in the classroom.

Math, Physics, CS Tutor at Washtenaw Community College *2022-2024*

Tutored several hundred students in math, physics, and computer science during my two year tenure at Washtenaw Communtiy College. Assisted several students in transferring to larger universities and pursuing STEM–oriented degrees.

Astro 101, 102, and 201 Lab Instructor at the University of Michigan *2023-2024*

Acted as one of several undergraduate lab instructors for introductory astronomy and astrophysics courses at the University of Michigan. Ran observing nights, answered student questions, and facilitated activities.

Undergraduate Instructor for Michigan Math and Science Scholars *Summer 2023, 2024*

Acted as the primary undergraduate instructor for a two week summer course focused on black holes and dark matter. Taught lab sections to high school students from around the globe and designed course materials. Students learned basic physics, astronomy, and python while pursuing a final project using real astronomical data.

MENTORED STUDENTS

† = primary mentor

† Jeremy Sun, University of Massachusetts Undergraduate *2024-*

Emma Davis, Smith College Undergraduate *2024-2025*

Callum Bloom, University of Michigan Undergraduate *2023-2024*

SERVICE & OUTREACH

Astronomy on Tap Western Mass. (Organizing Committee) *2025-*

Member of the organizing committee for the western Massachusets branch of Astronomy on Tap.

Astrobites (Author, Member) *2024-*

Article author and organization member of Astrobites, an organization run by graduate students aimed at providing informative, concise summaries of recent papers, guides for astronomy-related careers, and more. Wrote paper summaries, guides for navigating astronomy, and acted as a member of several organizational committees.

Astronomy Graduate School Application Guide (Lead Author) *2024*

Lead author on a comprehensive, 20 page guide aimed at assisting undergraduate students apply for astronomy PhD positions in the United States.

Astronomy Monthly at Washtenaw Community College (Founder, Organizer) *2023-2024*

Founded an educational astronomy program at Washtenaw Community College. The program was aimed at encouraging community college students to explore the world of professional astronomy. Ran observing nights, hosted talks from professional astronomers, and facilitated coding workshops oriented towards astronomy.

Telescope Operator and Science Guide *2023-2024*

Ran public observing events at the University of Michigan's student observatory. Operated a 0.4m telescope and dome and facilitated activities for attendees. Answered questions, educated interested community members, and assisted in basic astrophotography.

Not Rich at UMich (Board Member) *2023-2024*

Acted as board member for a student organization aimed at combating food insecurity and issues related to student poverty at the University of Michigan. Facilitated carpool grocery store trips, pay-as-you-can dinner events, and helped in creating a mutual aid community comprised of low income students at the University of Michigan.

PROFESSIONAL SOCIETY MEMBERSHIPS

GRAD Mentorship Program, Student Mentor *2024-*

American Astronomical Society, Member *2022-*

American Astronomical Society Division on Dynamical Astronomy, Member *2022-*

SKILLS

LANGUAGES: `Python, C++, HTML, CSS, zsh/bash, Latex`

PACKAGES: `numpy, astropy, matplotlib, scipy, photutils, agama, astroML`

TOOLS: `DS9, GALFIT, MAST, Git, FORSTAND, APT`

GENERAL: `Data Analysis, Data Visualization, Microsoft Office, Graphic Design`