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# Benjamin Naeve Velguth

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## Education

2020-2024

**Bachelor of Science**, *University of Michigan*, Ann Arbor, MI, Cumulative GPA: 3.52/4.0

**Major: Astronomy and Astrophysics**, Major GPA: 3.74/4.0

**Major: Interdisciplinary Physics**, Major GPA: 3.54/4.0

## Honors and Awards

**Building a Team for EXtragalactic ASTrophysics (TEXAS) Bridge Fellow**, *June 2024 - Present*

**Graduated with the Highest Honors: Astronomy and Astrophysics**, *May 2024*

**University Honors**, *Winter 2023*

**Douglas Houghton Scholar**, *September 2020 - May 2024*

## Publications

**Anisotropic Motion in Young Star Forming Regions Probed with 6D Stellar Kinematics**

Velguth, B. N., Li, Y., Ha, T. et. al. (in prep)

**The Resolved Star Formation History of the Nearby Ultra-Diffuse Galaxy, F8D1**

Smercina, A., Bell, E. F., Williams, B., Velguth, B. N., et. al. (in prep)

**A Timeline of the M81 Group: Properties of the Outskirts of M82 and NGC 3077**

Velguth, B. N., Bell, E. F., Smercina, A. et. al. 2024 ApJ 974 189

<https://iopscience.iop.org/article/10.3847/1538-4357/ad6cd8>

## Selected Presentations

\* Indicates an invited talk

2024

[Stars as Tracers of Galactic Evolution in the Near Universe: From Large to Small Scales](#)

*\*Indiana University Astronomy Tea Talk*

[Characterizing the Outskirts of M82 and NGC 3077: A Timeline of the M81 Group](#)

*U. of Michigan Department of Astronomy Undergraduate Research Poster Symposium*

## Understanding the Outskirts of M82 and NGC 3077: A Timeline of the M81 Group

*U. of Michigan Student Astronomical Society - Weekly Colloquium*

## Constraining the Star Formation History in the Nearest UDG, F8D1

*243rd Meeting of the AAS*

2023

## Spatially Resolving the Quenching Time in F8D1 with Luminous AGB Stars

*U. of Michigan Student Astronomical Society - Weekly Colloquium*

## Comparing the Stellar Mass Fractions of AGN and Non-AGN Spiral Galaxies

*U. of Michigan Astro 461 Poster Symposium at KPNO*

## Tails from the Great Beyond: Constraining the Star Formation History within the Tidal Tail of F8D1

*U. of Michigan Department of Astronomy Undergraduate Research Poster Symposium*

## Research Interests

Galaxy formation and evolution, resolved stellar populations, star formation and quenching, feedback processes, interstellar medium

## Research Experience

### June 2024 - Present

**TEXAS Bridge Fellow** *The University of Massachusetts - Amherst, Amherst, MA and The University of North Texas, Denton, TX*

Studying turbulence and kinematic evolution in various environments, from young stellar populations in the Milky Way to the cold gas surrounding black holes in distant galaxy clusters.

Advisor: Prof. Yuan Li

### February 2022-Present

**Research Assistant** *University of Michigan, Ann Arbor, MI*

Measuring the star formation history and metallicity of stellar populations found in tidal streams and stellar halos in the M81 Group to uncover the merger/interaction history of their host galaxies.

Advisors: Prof. Eric F. Bell and Dr. Adam Smercina

## Observing Experience

**MDM Observatory, McGraw-Hill 1.3m and Hiltner 2.4m, 8 hrs (PI)**

*Comparing the Stellar Mass Fractions of AGN and Non-AGN Spiral Galaxies*

## Computational Skills

- High Proficiency: Python, LaTeX
- Intermediate Proficiency: DS9
- Basic Familiarity: MATLAB, C++, HTML/CSS

## Service and Leadership

- (2024-Present) AAS Certified Peer Reviewer
- (2023-2024) Secretary of the Not Rich @ UMich student advocacy group
- (2023-2024) Outreach Chair of the University of Michigan Entomology Club
- (2023-2024) Undergraduate representative for the UMich Astronomy & Astrophysics curriculum committee

## Outreach and Mentorship

- (2024-Present) Mentoring two students at UMich studying the stellar halos of nearby galaxies
- (2024) Organized Sidewalk Astronomy events with the UNT Physics department
- (2023-2024) Initiated collaborations with organizations to fund pay-as-you-can meals for underprivileged students through Not Rich @ UMich
- (2023-2024) Organized a ride-share service to transport Not Rich @ UMich members to grocery stores and plasma donation centers
- (2023-2024) One of three mentors in the Student Astronomical Society Grad-Undergrad Mentorship Program for students interested in Ultra-Faint Dwarf galaxy research
- (2023-2024) Organized social events for bug club members, including documentary screenings and weekly “bug walks”
- (2023-2024) Coordinated City of Ann Arbor Natural Area Preservation Stewardship Workdays with the Entomology Club