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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: 3.47/4.0

**Major: Astronomy and Astrophysics**, Major GPA: 3.70/4.0

**Major: Interdisciplinary Physics**, Major GPA: 3.51/4.0

## Honors and Awards

**Graduating with the Highest Honors: Astronomy and Astrophysics**, *Winter 2024*

**University Honors**, *Winter 2023*

**Member of the Douglas Houghton Scholars Program**

## Publications

2024

**Mapping the Ages of Stars in the Extended Structures of M82 and NGC 3077**

**Velguth, B.**, Bell, E. F., Smercina, A. (in prep)

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

Smercina, A., Bell, E. F., Williams, B., **Velguth, B.**, *13 others* (in prep)

## Presentations

2024

**Mapping the Ages of Stars in the Extended Structures of M82 and NGC 3077**

**Velguth, B.**, Bell, E. F., Smercina, A. (in prep)

*Highest Honors Graduation Presentation*

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

**Velguth, B.,** Bell, E. F., Smercina, A. (in prep)

*243rd Meeting of the AAS*

2023

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

**Velguth, B.,** Bell, E. F., Smercina, A.

*Student Astronomical Society Weekly Colloquium*

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

**Velguth, B.,** Klein, M.

*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**

**Velguth, B.,** Bell, E. F., Smercina, A.

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

2022

### **Investigating Tidal Processing in M81's Ultra-Diffuse Galaxy, F8D1**

**Velguth, B.,** Bell, E. F., Smercina, A.

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

## **Research Experience**

**Research Interests:** Galaxy formation and evolution, stellar populations, star formation and quenching, galactic evolutionary timescales

2022-Present

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

Understanding the Star-Formation Histories of Tidal Streams and Stellar Halos in the M81 Group. Working with Dr. Eric F. Bell.

- Determined the star-formation cutoff time for both the tidal stream and core of F8D1, the nearest Ultra-Diffuse Galaxy to Earth, to uncover details about its interaction history with other M81 group members.
- Created age maps and radial profiles for the stellar halos of M82 and NGC 3077, furthering the understanding of these galaxies' rich interaction history with each other as well as M81.

May 2023

**Observational Astronomy Research** *University of Michigan, Kitt Peak National Observatory, AZ, Ground-Based Observations as a part of ASTRO 461*

- Wrote a proposal for telescope time and collected photometric and spectroscopic data using the McGraw-Hill and Hiltner telescopes at the MDM Observatory
- Learned to operate large, ground-based telescopes and reduce raw data
- Presented a poster to the staff of Kitt Peak National Observatory, with an emphasis on communicating high-level science to the general public
- Presented a 15-minute talk with Q and A

## Observing Experience

2023

**MDM Observatory, McGraw-Hill 1.3m, 4 hrs (PI)**

**Velguth, B.,** Klein, M., *Comparing the Stellar Mass Fractions of AGN and Non-AGN Spiral Galaxies*

- Operated and maintained the McGraw-Hill telescope

**MDM Observatory, Hiltner 2.4m, 4 hrs (PI)**

**Velguth, B.,** Klein, M., *Comparing the Stellar Mass Fractions of AGN and Non-AGN Spiral Galaxies*

- Operated and maintained the Hiltner telescope

## Computational Skills

- High Proficiency: Python, spectroscopic and photometric data reduction, LaTeX
- Intermediate Proficiency: DS9, MS Excel/Google Sheets
- Basic Familiarity: MATLAB, C++, HTML/CSS

## Organization Memberships

2023-Present

- Secretary of the Not Rich @ UMich student advocacy group
- Outreach Chair of the University of Michigan Entomology Club
- Undergraduate representative for the 2023-2024 Astronomy & Astrophysics curriculum committee

2021-Present

- Active Student Astronomical Society member

## Volunteering and Outreach

### 2023-Present

- Initiated collaborations with organizations willing to fund and support pay-as-you-can meals for underprivileged students through Not Rich @ Umich
- Organized a ride-share service to transport Not Rich @ UMich members to grocery stores and plasma donation centers
- One of three mentors in the Student Astronomical Society Grad-Undergrad Mentorship Program for students interested in Ultra-Faint Dwarf galaxy research
- Organized social events for bug club members. Included documentary screenings and weekly “bug walks”
- Coordinated City of Ann Arbor Natural Area Preservation Stewardship Workdays with the Entomology Club
- Participated in multiple Natural Area Preservation Stewardship Workdays as an independent citizen