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Benjamin Naeve Velguth

Education

2020-2024

Bachelor of Science, *University of Michigan,* Ann Arbor, MI, Cumulative GPA: 3.44/4.0

Major: Astronomy and Astrophysics, Major GPA: 3.67/4.0

Major: Interdisciplinary Physics, Major GPA: 3.41/4.0

Honors and Awards

Graduating with Highest Honors: Astronomy and Astrophysics

Member of the Douglas Houghton Scholars Program

Publications

2023

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)

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

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

Presentations

2022

University of Michigan Department of Astronomy Undergraduate Research Poster Symposium, *Investigating Tidal Processing in M81's Ultra-Diffuse Galaxy, F8D1*

2023

University of Michigan Astro 461 Poster Symposium, *Comparing the Stellar Mass Fractions of AGN and Non-AGN Spiral Galaxies*

University of Michigan Department of Astronomy Undergraduate Research Poster Symposium, *Tails from the Great Beyond: Constraining the Star Formation History within the Tidal Tail of F8D1*

2024

AAS 243 (in prep), *Constraining the Star Formation History in the Nearest UDG, F8D1*

Honors Graduation Presentation, *Mapping the Ages of Stars in the Extended Structures of M82 and NGC 3077* (in prep)

Research Experience

Research Interests: Galaxy formation and evolution, stellar populations, star formation histories, diffuse stellar structures

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 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.

Summer 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, *3 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 data reduction and analysis, spectroscopic and photometric data reduction, LaTeX
- Intermediate Proficiency: DS9, MS Excel/Google Sheets
- Basic Familiarity: MATLAB, C++

Organization Memberships

- 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
- Active Student Astronomical Society member

Volunteering and Outreach

- Initiated collaborations with groups willing to fund pay-as-you-can meals for underprivileged students through Not Rich @ Umich
- Coordinated Natural Area Preservation Stewardship Workdays with the Entomology Club and the Student Astronomical Society
- Participated in multiple Natural Area Preservation Stewardship Workdays as an independent citizen