

# Nicholas Susemihl

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## EDUCATION

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**MSc, Analytics, Georgia Institute of Technology, Atlanta, GA, USA.**

August 2020 – May 2022

Concentration in Computational Data Science. GPA: 3.92/4.00.

**BS, Astronomy & Astrophysics, University of Michigan, Ann Arbor, MI, USA.**

September 2016 – May 2020

Minor in Statistics. Overall GPA: 3.078/4.000. In-major Astronomy GPA: 3.585/4.000.

## PROFESSIONAL EXPERIENCE

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**NASA Exoplanet Archive, IPAC, California Institute of Technology**

Scientific Data Analyst

August 2022 - Present

- Enhanced the data acquisition and ingestion pipeline using machine learning to predict publications' relevance, mine data from text, and automate ad-hoc database queries under the supervision of Dr. Jessie Christiansen.

**Planetary Science Division, NASA Goddard Space Flight Center**

Post-Baccalaureate Research Assistant

July 2020 - August 2022

- Developed a novel technique to define the parameter space more effectively for pre-computed grids of simulated exoplanet spectra and employed interpolation-based Bayesian methods to greatly accelerate retrievals of exoplanet atmospheres under the supervision of Dr. Avi Mandell. Created and maintained analytics dashboard for the Exoplanet Modelling and Analysis Center.

**University of Michigan Department of Astronomy**

Undergraduate Research Assistant

October 2016 – July 2020

- Synthesized archival data and used MCMC to fit an analytical model describing the orbital distribution and binarity of M dwarfs under the supervision of Prof. Michael Meyer.

Instructional Aide

September 2017 – March 2020

- Led instruction of extracurricular astronomy course for non-majors and facilitated telescope observing laboratory sections for large classes.

## REFEREED PUBLICATIONS

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- Susemihl, N.**, Christiansen, J., et al. *The Exoplanet Archive's Machine Learning Paper Classifier*, in prep.
- Susemihl, N.**, Mandell, A. M., Villanueva, G. L., et al. 2023. *The Astronomical Journal*, 166, 23. *Grid-based Atmospheric Retrievals for Reflected-light Spectra of Exoplanets Using PSGnest*.
- Latouf, N., Mandell, A. M., Villanueva, G. L., **Susemihl, N.** et al., 2023. *The Astronomical Journal*, 166, 12. *Bayesian Analysis for Remote Biosignature Identification on exoEarths (BARBIE). I. Using Grid-based Nested Sampling in Coronagraphy Observation Simulations for H2O*.
- Susemihl, N.**, Meyer M. R. 2022, *Astronomy & Astrophysics*, 657, 6. *Constraints on the orbital separation distribution and binary fraction of M dwarfs*.

## SELECTED NON-REFEREED PUBLICATIONS

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- Renaud, J. P., Lopez, E., Brande, J., Cruz-Arce, C. E., Kelahan, C. **Susemihl, N.**, et al. 2022. *Research Notes of the AAS*, 6, 185. *The Exoplanet Modeling and Analysis Center at NASA Goddard*.
- Baines, T., Zimmerman, N. T., Juanolo-Parramon, R., **Susemihl, N.**, et al. 2022. *Proceedings of the SPIE*, 12180, 11. *Simulated design trades for a visible-wavelength integral field spectrograph operating behind a space coronagraph*.
- Meyer, M. R., Calissendorff, P., Amara, A., **Susemihl, N.**, et al. 2022. *Bulletin of the AAS*, 54, 5. *Mind the Local Minima: Gas Giant Planets and Brown Dwarf Companions as a Function of Orbital Separation and Host Star Mass*.
- Meyer, M., Amara, A., **Susemihl, N.**, et al. 2021. *AAS Meeting #237*, 218.01, 53. *Planetary and Brown Dwarf Companion Mass Ratio Distribution versus Stellar Mass and Orbital Separation*.
- Zimmerman, N. T., McElwain, M. W., Groff T. D. Juanolo-Parramon, R., Mandell, A. M., Marley, M. S., Rauscher, B. J., Subedi, H. B., Baines, T., Batalha, N. E., Roberge, A., Smith, A. J. R. W., Stark, C., **Susemihl, N.**, et al. 2020. *Proceedings of the SPIE*, 11443, 7. *ExoSpec project: an exoplanet spectroscopy technology research collaboration based at NASA's Goddard Space Flight Center and Ames Research Center*.
- Susemihl, N.**, Meyer, M. R. 2020. *AAS Meeting #235*, 170.10, 52. *The Orbital Surface Density Distribution and Multiplicity of M-Dwarfs*.

## TALKS & PRESENTATIONS

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- Greater IPAC Technology Symposium 2023, IPAC, California Institute of Technology. *The Exoplanet Archive's Machine Learning Paper Classifier*.
- AbSciCon 2022, American Geophysical Union. *Grid-Based Atmospheric Retrievals for Reflected-Light Spectra of Exoplanets using PSGnest*.
- American Astronomical Society Meeting #235, 2020. *The Orbital Surface Density Distribution and Multiplicity of M-Dwarfs* (Poster).
- Astronomy Undergraduate Poster Session 2019, University of Michigan. *Good Things Come in Pairs: The Companion Frequency and Orbital Distribution of M-Dwarf Binaries* (Poster).
- Astronomy Undergraduate Poster Session 2018, University of Michigan. *Companion Frequency and Mass Ratio Distribution of M Dwarfs* (Poster).
- Astronomy Undergraduate Poster Session 2017, University of Michigan. *The Companion Mass Ratio Distribution of M-Dwarf Stars as a Function of Stellar Separation* (Poster).

## OUTREACH ACTIVITIES & OTHER EXPERIENCES

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- Student Astronomical Society (Member 2016 – 2020, Webmaster 2019 – 2020), University of Michigan. Guided public through tours of observatory facility and night sky presentations. Expanded club's reach through management of social media and web presence. Recognized for commitment to service by the Department of Astronomy.
- Observing experience: Michigan-Dartmouth-MIT Observatory 2.4-meter Hiltner Telescope, Kitt Peak National Observatory. Co-I on high-mass star multiplicity survey (instructional setting).