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Noah R. Franz

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Summary

National Science Foundation Graduate Research Fellow at the University of Arizona Steward Observatory. Interested in applying complex data science techniques to discover and analyze tidal disruption events in large astronomical surveys.

Education

Ph.D. in Astronomy and Astrophysics — **Anticipated 2028**
University of Arizona (Steward Observatory) — *Tucson, AZ*

B.S. in Physics & Applied Data Science — **May 2023**
Siena College — *Loudonville, NY*

Skills

Programming	Python, Java, Bash, Git, LaTeX, SQL, MATLAB, Basic HTML
Related Programming Packages	NumPy, Pandas, Matplotlib, Keras, Tensorflow, Astropy, Flask
Other	GitHub, Overleaf, Jupyter, Oracle, ArangoDB, Statistical Analysis

Projects

University of Arizona, Department of Astronomy & Steward Observatory

Tool for Rapid Object Vetting and Examination (TROVE) — *Oct 2024 - Present*

- Actively developing a tool for connecting and vetting potential electromagnetic counterparts to non-localized multimessenger events, such as gravitational waves and neutrino observations.

Searches After Gravitational waves Using ARizona Observatories (SAGUARO) — *May 2024 - Present*

- Maintain the SAGUARO Target and Observation Management (TOM) software infrastructure.
- Contribute features to the SAGUARO TOM including improved target vetting and user experience.

The Open mulTiwavelength Transient Event Repository (OTTER) — *Aug 2023 - Present*

- Accumulate and clean $> 100,000$ photometric observations of tidal disruption events from the literature into a customized JSON data schema stored as an ArangoDB document database.
- Develop the software API to access the cleaned dataset of photometry.
- Build a front-end web application for viewing, downloading, and contributing other datasets to the catalog.

Radio Observations of Extreme Coronal Line Emitters — *Aug 2023 - Present*

- Reduce radio observations of Extreme Coronal Line Emitters using the standard CASA software.
- Analyze the results of the radio observations to better understand the connection between extreme coronal line emitters and tidal disruption events.

University of Hawaii at Manoa, Institute for Astronomy

Research Intern - Tip of the Red Giant Branch Bounds on the NMDM Revisited — *Jun 2022 - Aug 2022*

- Modified an open source stellar evolution simulation using Fortran.
- Optimized a simulation by using python to train a deep neural network and use it as a simulation emulator.
- Conducted a Bayesian statistical analysis, Markov Chain Monte Carlo, to constrain a particle physics property.
- Code is available on GitHub and results will be presented in Franz et al. (2023), in progress (see second page).

University of California, Berkeley Search for Extraterrestrial Intelligence (SETI)

Research Intern - Technosignature Search of Transiting TESS Targets of Interest — *Jun 2021 - May 2022*

- Searched through and analyzed over 30 terabytes of Green Bank Telescope radio data for evidence of extraterrestrial intelligence using Python and Bash.
- Optimized the existing search software by developing a a parallel processing algorithm using multiple compute nodes on a cluster.

- Created visualizations of multi-dimensional radio signals using matplotlib.
- Code is available on GitHub and results are published in Franz et al. (2022), *Astronomical Journal*.

Siena College

`hepfile` Development *May 2023 - July 2023*

- Developed the Python `hepfile` software to store so-called "hetergeneous" datasets.
- Added tools for integration with existing Python software.

Senior Thesis *Sep 2022 - May 2023*

- Developed a pipeline to search Dark Energy Spectroscopic Instrument data for spectroscopic lenses.
- Analyzed spectroscopic lenses to extract source object properties.

Astrophysics Research Intern *Jan 2021 - Feb 2022*

- Developed a Python program to simulate and analyze spectroscopic lenses to place limits on Dark Energy Spectroscopic Instrument observation parameters.
- Code is available on GitHub and results were presented at the 237th meeting of the American Astronomical Society.

Electronics Research Intern *Dec 2021 - Feb 2022*

- Designed a circuit for an automatic hand sanitizer dispenser with MATLAB, Simulink, and Eagle CAD.

Honors & Awards

National Science Foundation Graduate Research Intern *Sep 2023 - Aug 2028*
Siena College Excellence in Physics Award *May 2023*
Siena College Excellence in Applied Data Science Award *May 2023*
Siena College Physics Department Sophomore Excellency Award *May 2021*
Sigma Pi Sigma Honor Society Member *May 2021 - May 2023*
Siena College President's List *Dec 2019 - May 2023*

Teaching & Outreach Experience

University of Arizona

Astronomy Education for Undergraduate Majors *Nov 2024 - Present*

- Designed a lesson plan utilizing Jupyter Notebooks to teach basic programming concepts along with improving students astronomy knowledge
- This is a work in progress and all educational materials will be made publicly available

Space Drafts Organizer *Nov 2024 - Present*

- Facilitate monthly public science talks in Tucson, AZ as part of the international organization Astronomy on TAP

Black Hole Summer Camp Science Expert *June 2024*

- Teach elementary school students about Black Holes as part of the Flandrau Science Center Black Hole Summer Camp.
- Collaborate with an elementary school instructor to create interactive teaching activities on Black Holes.

Siena College

Teaching Assistant *Aug 2020 - May 2023*

- Facilitated a lab or office hours to help students learn physics, programming, and data science concepts.
- Classes include Introduction to Exploratory Data Analysis and Visualization, Computational Physics, General Physics I, & General Physics II.

Peer Tutor *Aug 2020 - May 2022*

- Explained difficult academic concepts to peers taking General Physics.

Physics Club Outreach *Feb 2020, Oct 2022, Apr 2023*

- Taught middle school aged students basic physics and engineering concepts.

Siena College Public Observing Night *Sep 2022 - May 2023*

- Telescope operator for Siena College public observing nights.
- Taught other students about the astronomical objects being observed.

Leadership & Volunteer Experience

Member of Siena College Astronomy Club	*April 2022 - May 2023*
President of Siena College Ultimate Frisbee Team	*Sep 2020 - May 2023*
Resident Assistant	*Aug 2020 - May 2021*
Member of Siena College Physics Club	*September 2019 - present*
GROC Mountain Bike Patrol (National Ski Patrol)	*Oct 2018 - Dec 2022*

Publications, Presentations, & Software

First Author Publications

Noah Franz, Bhagya Subrayan, Charles D. Kilpatrick, Griffin Hosseinzadeh, David J. Sand, Kate D. Alexander, Wen-fai Fong, Collin T. Christy, Jeniveve Pearson, Tanmoy Laskar, Brian Hsu, Jillian Rastinejad, Michael J. Lundquist, Edo Berger, K. Azalee Bostroem, Clecio R. Bom, Phelipe Darc, Mark Gurwell, Shelbi Hostler Schimpf, Garrett K. Keating, Phillip Noel, Conor Ransome, Ramprasad Rao, Luidhy Santana-Silva, A. Souza Santos, Manisha Shrestha, Ramya Anche, Jennifer E. Andrews, Sanchayeeta Borthakur, Nathaniel R. Butler, Deanne L. Coppejans, Philip N Daly, Kathryne J. Daniel, Paul C. Duffell, Tarraneh Eftekhari, Carl E. Fields, Alexander T. Gagliano, Walter W. Golay, Aldana Grichener, Erika T. Hamden, Daichi Hiramatsu, Harsh Kumar, Vikram Manikantan, Raffaella Margutti, Vasileios Paschalidis, Kerry Paterson, Daniel E. Reichart, Mathieu Renzo, Kali Salmas, Genevieve Schroeder, Nathan Smith, Kristine Spekkens, Jay Strader, David E. Trilling, Nicholas Vieira, Benjamin Weiner, and Peter K. G. Williams. Optimizing Kilonova Searches: A Case Study of the Type IIb SN 2025ulz in the Localization Volume of the Low-Significance Gravitational Wave Event S250818k. *arXiv e-prints*, page arXiv:2510.17104, October 2025.

Noah Franz, Kate D Alexander, Sebastian Gomez, Collin T Christy, Tanmoy Laskar, Sjoert van Velzen, Nicholas Earl, Suvi Gezari, Mitchell Karmen, Raffaella Margutti, Jeniveve Pearson, V. Ashley Villar, and Ann I Zabludoff. The Open mulTiwavelength Transient Event Repository (OTTER): Infrastructure Release and Tidal Disruption Event Catalog. *arXiv e-prints*, page arXiv:2509.05405, September 2025.

Noah Franz, Mitchell Dennis, and Jeremy Sakstein. Tip of the Red Giant Branch Bounds on the Neutrino Magnetic Dipole Moment Revisited. *arXiv e-prints*, page arXiv:2307.13050, July 2023. In Prep.

Noah Franz, Steve Croft, Andrew P. V. Siemion, et al. The breakthrough listen search for intelligent life: Technosignature search of transiting tess targets of interest. *The Astronomical Journal*, 163(3):104, feb 2022.

Other Publications

Liyang Chen, Xiaofeng Wang, Qinyu Wu, Moira Andrews, Joseph Farah, Paolo Ochner, Andrea Reguitti, Thomas G. Brink, Jujia Zhang, Cuiying Song, Jialian Liu, Alexei V. Filippenko, David J. Sand, Irene Albanese, Kate D. Alexander, Jennifer Andrews, K. Azalee Bostroem, Yongzhi Cai, Collin Christy, Ali Esamdin, Andrea Farina, Noah Franz, D. Andrew Howell, Brian Hsu, Maokai Hu, Abdusamatjan Iskandar, Liping Li, Gaici Li, Dongyue Li, Wenxiong Li, Jinzhong Liu, Curtis McCully, Megan Newsome, Yuan Qi Ni, Andrea Pastorello, Estefania Padilla Gonzalez, Jeniveve Pearson, Haowei Peng, Conor Ransome, Manisha Shrestha, Nathan Smith, Bhagya Subrayan, Giacomo Terreran, Giorgio Valerin, J. Vinkó, Sergiy S. Vasylyev, Letian Wang, Zhenyu Wang, Hao Wang, J. Craig Wheeler, Kathryn Wynn, Danfeng Xiang, Shengyu Yan, Weimin Yuan, Juan Zhang, WeiKang Zheng, and Yu Zhang. SN 2024iss: A Double-peaked Type IIb Supernova with Evidence of Circumstellar Interaction. *arXiv e-prints*, page arXiv:2510.22997, October 2025

Itai Sfaradi, Raffaella Margutti, Ryan Chornock, Kate D. Alexander, Brian D. Metzger, Paz Beniamini, Rodolfo Barniol Duran, Yuhan Yao, Assaf Horesh, Wael Farah, Edo Berger, Nayana A. J., Yvette Cendes, Tarraneh Eftekhari, Rob Fender, Noah Franz, Dave A. Green, Erica Hammerstein, Wenbin Lu, Eli Wiston, Yirmi Bernstein, Joe Bright, Collin T. Christy, Luigi F. Cruz, David R. DeBoer, Walter W. Golay, Adelle J. Goodwin,

Mark Gurwell, Garrett K. Keating, Tanmoy Laskar, James C. A. Miller-Jones, Alexander W. Pollak, Ramprasad Rao, Andrew Siemion, Sofia Z. Sheikh, Nadav Shoval, and Sjoert van Velzen. The First Radio-bright Off-nuclear Tidal Disruption Event AT 2024tvd Reveals the Fastest-evolving Double-peaked Radio Emission. , 992(2):L18, October 2025

Collin T. Christy, Kate D. Alexander, Tanmoy Laskar, Noah Franz, Adelle J. Goodwin, Jeniveve Pearson, Edo Berger, Yvette Cendes, Ryan Chornock, Deanne Coppejans, Tarraneh Eftekhari, Raffaella Margutti, James C. A. Miller-Jones, Melanie Krips, Enrico Ramirez-Ruiz, David J. Sand, Richard Saxton, Manisha Shrestha, and Sjoert van Velzen. Dichotomy in Long-Lived Radio Emission from Tidal Disruption Events AT 2020zso and AT 2021sdu: Multi-Component Outflows vs. Host Contamination. *arXiv e-prints*, page arXiv:2509.14317, September 2025

K. Azalee Bostroem, Stefano Valenti, David J. Sand, Jeniveve Pearson, Manisha Shrestha, Jennifer E. Andrews, Luc Dessart, W. V. Jacobson-Galan, Brian Hsu, Aravind P. Ravi, Moira Andrews, Collin Christy, Yize Dong, Noah Franz, Joseph Farah, Alexei V. Filippenko, Kiranjyot Gill, Emily T. Hoang, Griffin Hosseinzadeh, D. Andrew Howell, Daryl Janzen, Jacob E. Jencson, Saurabh W. Jha, Lindsey A. Kwok, Michael Lundquist, Aidan Martas, Curtis McCully, Darshana Mehta, Megan Newsome, Estefania Padilla-Gonzalez, Nicolas E. Meza Retamal, Nathan Smith, Bhagya M. Subrayan, and Giacomo Terreran. Late-time Hubble Space Telescope Ultraviolet Spectra of SN 2023ixf and SN 2024ggi Show Ongoing Interaction with Circumstellar Material. *arXiv e-prints*, page arXiv:2508.11756, August 2025

Lindsey A. Kwok, Mridweeka Singh, Saurabh W. Jha, Stéphane Blondin, Raya Dastidar, Conor Larison, Adam A. Miller, Jennifer E. Andrews, Moira Andrews, G. C. Anupama, Katie Auchettl, Dominik Bánhidi, Barnabas Barna, K. Azalee Bostroem, Thomas G. Brink, Régis Cartier, Ping Chen, Collin T. Christy, David A. Coulter, Sofia Covarrubias, Kyle W. Davis, Connor B. Dickinson, Yize Dong, Joseph R. Farah, Alexei V. Filippenko, Andreas Flörs, Ryan J. Foley, Noah Franz, Christoffer Fremling, Lluís Galbany, Anjasha Gangopadhyay, Aarna Garg, Peter Garnavich, Elinor L. Gates, Or Graur, Alexa C. Gordon, Daichi Hiramatsu, Emily Hoang, D. Andrew Howell, Brian Hsu, Joel Johansson, Arti Joshi, Lordrick A. Kahinga, Ravjit Kaur, Sahana Kumar, Piramon Kumnurdmanee, Hanindyo Kuncarayakti, Natalie LeBaron, Chang Liu, Keiichi Maeda, Kate Maguire, Curtis McCully, Darshana Mehta, Luca M. Menotti, Anne J. Metevier, Kuntal Misra, C. Tanner Murphey, Megan Newsome, Estefania Padilla Gonzalez, Kishore C. Patra, Jeniveve Pearson, Anthony L. Piro, Abigail Polin, Aravind P. Ravi, Armin Rest, Nabeel Rehemtulla, Nicolas Meza Retamal, Olivia M. Robinson, César Rojas-Bravo, Devendra K. Sahu, David J. Sand, Brian P. Schmidt, Steve Schulze, Michaela Schwab, Manisha Shrestha, Matthew R. Siebert, Sunil Simha, Nathan Smith, Jesper Sollerman, Bhagya M. Subrayan, Tamás Szalai, Kirsty Taggart, Rishabh Singh Teja, Tea Temim, Jacco H. Terwel, Samaporn Tinyanont, Stefano Valenti, Jorge Anais Vilchez, József Vinkó, Aya L. Westerling, Yi Yang, and WeiKang Zheng. JWST and Ground-based Observations of the Type Iax Supernovae SN 2024pxl and SN 2024vjm: Evidence for Weak Deflagration Explosions. , 989(2):L33, August 2025

Kate D. Alexander, Raffaella Margutti, Sebastian Gomez, Michael Stroh, Ryan Chornock, Tanmoy Laskar, Y. Cendes, Edo Berger, Tarraneh Eftekhari, Noah Franz, Aprajita Hajela, B. D. Metzger, Giacomo Terreran, Michael Bietenholz, Collin Christy, Fabio de Colle, S. Komossa, Matt Nicholl, Enrico Ramirez-Ruiz, Richard Saxton, Genevieve Schroeder, Peter Williams, and William Wu. The Multi-Wavelength Context of Delayed Radio Emission in TDEs: Evidence for Accretion-Driven Outflows. *arXiv e-prints*, page arXiv:2506.12729, June 2025

Mridweeka Singh, Lindsey A. Kwok, Saurabh W. Jha, R. Dastidar, Conor Larison, Alexei V. Filippenko, Jennifer E. Andrews, Moira Andrews, G. C. Anupama, Prasiddha Arunachalam, Katie Auchettl, Dominik BÁnhidi, Barnabas Barna, K. Azalee Bostroem, Thomas G. Brink, RÉgis Cartier, Ping Chen, Collin T. Christy, David A. Coulter, Sofia Covarrubias, Kyle W. Davis, Connor B. Dickinson, Yize Dong, Joseph Farah, Andreas FlÖrs, Ryan J. Foley, Noah Franz, Christoffer Fremling, LluÍs Galbany, Anjasha Gangopadhyay, Aarna Garg, Elinor L. Gates, Or Graur, Alexa C. Gordon, Daichi Hiramatsu, Emily Hoang, D. Andrew Howell, Brian Hsu, Joel Johansson, Arti Joshi, Lordrick A. Kahinga, Ravjit Kaur, Sahana Kumar, Piramon Kumnurdmanee, Hanindyo Kuncarayakti, Natalie Lebaron, C. Lidman, Chang Liu, Keiichi Maeda, Kate Maguire, Bailey Martin, Curtis Mccully, Darshana Mehta, Luca M. Menotti, Anne J. Metevier, A. A. Miller, Kuntal Misra, C. Tanner Murphey, Megan Newsome, Estefania Padilla Gonzalez, Kishore C. Patra, Jeniveve Pearson, Anthony L. Piro, Abigail Polin, Aravind P. Ravi, Armin Rest, Nabeel Rehemtulla, Nicolas Meza Retamal, O. M. Robinson, CÉsar Rojas-Bravo, Devendra K. Sahu, David J. Sand, Brian P. Schmidt, Steve Schulze, Michaela Schwab, Manisha

Shrestha, Matthew R. Siebert, Sunil Simha, Nathan Smith, Jesper Sollerman, Shubham Srivastav, Bhagya M. Subrayan, TamÁs Szalai, Kirsty Taggart, Rishabh Singh Teja, Jacco H. Terwel, Samaporn Tinyanont, Stefano Valenti, JÓzsef VinkÓ, Aya L. Westerling, Yi Yang, and Weikang Zheng. Photometry and Spectroscopy of SN 2024pxl: A Luminosity Link Among Type Iax Supernovae. *arXiv e-prints*, page arXiv:2505.02943, May 2025

Jennifer E. Andrews, Manisha Shrestha, K. Azalee Bostroem, Yize Dong, Jeniveve Pearson, M. M. Fausnaugh, David J. Sand, S. Valenti, Aravind P. Ravi, Emily Hoang, Griffin Hosseinzadeh, Ilya Ilyin, Daryl Janzen, M. J. Lundquist, Nicolás Meza, Nathan Smith, Saurabh W. Jha, Moira Andrews, Joseph Farah, Estefania Padilla Gonzalez, D. Andrew Howell, Curtis McCully, Megan Newsome, Craig Pellegrino, Giacomo Terreran, Patrick Wiggins, Brian Hsu, Collin T. Christy, Noah Franz, Xiaofeng Wang, Jialian Liu, and Liyang Chen. Asymmetries and Circumstellar Interaction in the Type II SN 2024bch. , 980(1):37, February 2025

Sebastian Gomez, Matt Nicholl, Edo Berger, Peter K. Blanchard, V. Ashley Villar, Sofia Rest, Griffin Hosseinzadeh, Aysha Aamer, Yukta Ajay, Wasundara Athukoralalage, David C. Coulter, Tarraneh Eftekhari, Achille Fiore, Noah Franz, Ori Fox, Alexander Gagliano, Daichi Hiramatsu, D. Andrew Howell, Brian Hsu, Mitchell Karmen, Matthew R. Siebert, Réka Könyves-Tóth, Harsh Kumar, Curtis McCully, Craig Pellegrino, Justin Pierel, Armin Rest, and Qinan Wang. The Type I superluminous supernova catalogue I: light-curve properties, models, and catalogue description. , 535(1):471–515, November 2024

Presentations

Noah Franz, Mitchell Dennis, and Jeremy Sakstein. Tip of the red giant branch constraints on the neutrino magnetic dipole moment revisited. *241st American Astronomical Society*, 2023.

Noah Franz. Neutrinos, machine learning, and stellar evolution. aug 2022.

Noah Franz, Steve Croft, Andrew P. V. Siemion, et al. The breakthrough listen search for intelligent life: Technosignature search of transiting tess targets of interest. *73rd International Astronautical Congress*, 2022.

Noah Franz, Steve Croft, Andrew P. V. Siemion, et al. The breakthrough listen search for intelligent life: Technosignature search of transiting tess targets of interest. *239th American Astronomical Society*, 2022. Conference cancelled due to the COVID-19 pandemic.

Noah Franz, Brian Bauer, and John Moustakas. Identifying Strong Gravitational Lenses in DESI Spectroscopy. *237th American Astronomical Society*, 53(1), jan 11 2021. https://baas.aas.org/pub/2021n1i125p05.

Software

Matt Bellis, Noah Franz, and Matt Dreyer. mattbellis/hepfile: v0.1.7, July 2023. https://doi.org/10.5281/zenodo.8171930.