

Nicholas Saunders

NSF Graduate Research Fellow

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RESEARCH INTERESTS

Detection and characterization of exoplanets, space telescopes, asteroseismology, stellar evolution modeling, gyrochronology, computational astrophysics, software development.

EDUCATION

INSTITUTE FOR ASTRONOMY, UNIVERSITY OF HAWAII AT MĀNOA

PhD Astronomy expected 2024

MSc Astronomy June 2021

UNIVERSITY OF WASHINGTON

BS Physics & Astronomy (with Honors) June 2018

BA Comparative Literature (emphasis: Cinema Studies) June 2018

APPOINTMENTS

Visiting Scientist Aug 2021 - present

DEPARTMENT OF ASTROPHYSICS, AMERICAN MUSEUM OF NATURAL HISTORY, NEW YORK, NY

NSF Graduate Research Fellow Sept 2019 - present

Advisors: Dan Huber, Sam Grunblatt, Jen van Saders

INSTITUTE FOR ASTRONOMY, UNIVERSITY OF HAWAII AT MĀNOA, HONOLULU, HI

Undergraduate Research Assistant Jan 2016 - Aug 2018

Advisors: Rodrigo Luger, Rory Barnes

UNIVERSITY OF WASHINGTON, SEATTLE, WA

Planetary Science Research Assistant Apr 2011 - June 2013

Advisors: Bernard Nordmann, Tom McCord

THE BEAR FIGHT INSTITUTE, WINTHROP, WA

RELEVANT EMPLOYMENT

Kepler & K2 Training Materials Developer Apr 2020 - Sept 2020

NUMFOCUS, STSCI, THE ASTROPY PROJECT, REMOTE FROM HONOLULU, HI

Research Support Scientist, Kepler/K2 Guest Observer Office Aug 2018 - Aug 2019

NASA AMES RESEARCH CENTER, MOUNTAIN VIEW, CA

Data Visualization Analyst, UW Mobile Planetarium June 2018 - Aug 2018

UNIVERSITY OF WASHINGTON, SEATTLE, WA

HONORS

National Science Foundation Graduate Research Fellowship 2021

Honorable Mention, National Science Foundation Graduate Research Fellowship 2019

Departmental Honors in Astronomy, University of Washington 2018

1st Place: Best Online Photo Essay, Washington Newspaper Publishers Association 2016

Washington NASA Space Grant, University of Washington 2013

Irving and Louise Donnergaard Endowment, University of Washington 2013

PUBLICATIONS

NASA ADS h-index: **7**

first author →

2. **Saunders, N.**, Grunblatt, S., Huber, D., et al. (2021, submitted) [TESS Giants Transiting Giants I: A Non-inflated Hot Jupiter Orbiting a Massive Subgiant](#). arXiv:2108.02294
1. **Saunders, N.**, Luger, R., Barnes, R. (2019) [The Pointing Limits of Transiting Exoplanet Light Curve Characterization with Pixel Level De-correlation](#). AJ, 157, 197

co-author →

11. Grunblatt, S., Zinn, J., Price-Whelan, A., Angus, R., **Saunders, N.** et al. (2021) [Age-Dating Red Giant Stars Associated with Galactic Disk and Halo Substructures](#). ApJ, 916, 88
10. Stello, D., **Saunders, N.**, Grunblatt, S., et al. (2021, submitted) [TESS asteroseismology of the Kepler red giants](#). arXiv:2107.05831
9. Hedges, C., Angus, R., Barentsen, G., **Saunders, N.**, Montet, B.T., Gully-Santiago, M. (2020) [Systematics-insensitive Periodogram for Finding Periods in TESS Observations of Long-period Rotators](#). RNAAS, 4, 220
8. Hedges, C., **Saunders, N.**, Barentsen, G., Coughlin, J., Vinícius de Miranda Cardoso, J., Kostov, V., Dotson, J., Cody, A.M. (2019) [Four Small Planets Buried in K2 Systems: What Can We Learn for TESS?](#) ApJL, 880, 1
7. Feinstein, A.D., Montet, B.T., Bean, J.L. et al. including **Saunders, N.** (2019) [eleanor: A tool for extracting light curves from the TESS Full-Frame Images](#). PASP, 131, 1003
6. David, T., Cody, A.M., Hedges C. et al. including **Saunders, N.** (2019) [A warm Jupiter-sized planet transiting the pre-main sequence star V1298 Tau](#). AJ, 158, 2
5. Mahabal, A., Rebbapragada, U., Walters, R. et al. including **Saunders, N.** (2019) [Machine Learning for the Zwicky Transient Facility](#). PASP, 131, 997
4. Hedges, C., **Saunders, N.**, Barentsen, G., Gully-Santiago, M., Cody, A.M., Vinícius de Miranda Cardoso, J. (2019) [A Hot Jupiter Exoplanet Candidate towards the Galactic Center Identified in Kepler/K2 Campaign 9 Microlensing Survey](#). RNAAS, 3, 1
3. Barentsen, G., Hedges, C., **Saunders, N.**, Cody, A.M., Gully-Santiago, M., Bryson, S., Dotson, J. (2018) [Kepler's Discoveries Will Continue: 21 Important Scientific Opportunities with Kepler & K2 Archive Data](#). arXiv:1810.12554
2. Cody, A.M., Barentsen, G., Hedges, G., Gully-Santiago, M., Dotson, J., Barclay, T., Bryson, S., **Saunders, N.** (2018) [A catalog of 29 open clusters and associations observed by the Kepler and K2 Missions](#). RNAAS, 2, 4
1. Luger, R., Kruse, E., Foreman-Mackey, D., Agol, E., **Saunders, N.** (2018) [An Update to the EVEREST K2 Pipeline: Short Cadence, Saturated Stars, and Kepler-like Photometry down to Kp = 15](#). AJ, 156, 99

SOFTWARE

		GitHub ★'s
Lead Developer	→ scope – simulated K2 CCD observations to test noise removal	6
Core Developer	→ lightkurve – time series analysis tools for Kepler, K2 & TESS	220
Core Developer	→ eleanor – photometry pipeline for TESS Full Frame Images	32
Contributor	→ everest – K2 noise removal pipeline	60

TEACHING & OUTREACH

Graduate Outreach Representative INSTITUTE FOR ASTRONOMY, UNIVERSITY OF HAWAII AT MĀNOA	Aug 2020 – present
Science Pen Pal LETTERS TO A PRE-SCIENTIST	Sept 2020 – present
Project Mentor, “HI STAR” High School Summer Research INSTITUTE FOR ASTRONOMY, UNIVERSITY OF HAWAII AT MĀNOA	July 2020
Graduate Teaching Assistant INSTITUTE FOR ASTRONOMY, UNIVERSITY OF HAWAII AT MĀNOA	Aug 2019 – Jan 2020
Planetarium Organizer UNIVERSITY OF WASHINGTON	Jan 2018 – Aug 2018
Teaching Assistant UNIVERSITY OF WASHINGTON	Jan 2017 – June 2018
Astrobiology Mobile Planetarium Presenter UNIVERSITY OF WASHINGTON	Mar 2018
Undergraduate Liaison, Astronomy Department Faculty Board UNIVERSITY OF WASHINGTON	Sept 2017 – Aug 2018
NASA Total Solar Eclipse Outreach Event Volunteer WASHINGTON NASA SPACE GRANT CONSORTIUM	Aug 2017
UW Planetarium Volunteer Presenter UNIVERSITY OF WASHINGTON	Nov 2015 – Aug 2018

TALKS

science talks →

- Saunders, N.**, “Revealing the Mysteries of Planets Around Evolved Stars with TESS,” AAS 235, Honolulu, HI, Jan 2020
- Saunders, N.**, “A Catalog of Uniform Exoplanet Parameters,” CIPS Seminar, University of California, Berkeley, CA, Apr 2019
- Saunders, N.**, “Analysis of Simulated Kepler/K2 Exoplanet Transit Parameters,” AAS 233, Seattle, WA, Jan 2019
- Saunders, N.**, “Simulated CCD Photometry: An Application for K2 Sputtering,” Kepler/K2 Science Office, NASA Ames, Moffett Field, CA, May 2018
- Saunders, N.**, “Searching for Exoplanets with Sputtering Space Telescopes,” UW Undergraduate Research Symposium, Seattle, WA, May 2018
- Saunders, N.**, Luger, R., Barnes, R., “De-trending K2 Exoplanet Targets for High Spacecraft Motion,” AAS 231, Washington DC, Jan 2018
- Saunders, N.**, Luger, R., “Sputtering Effects on K2 Systematics Removal,” Kepler/K2 Guest Observer Office, NASA Ames, Moffett Field, CA, Oct 2017
- Saunders, N.**, “Effects of Pixel Sensitivity Variation on K2 Systematics Removal,” UW Undergraduate Research Symposium, Seattle, WA, May 2017

outreach talks →

Saunders, N., "Putting the Science in Science Fiction," Astronomy on Tap, San Jose, CA, May 2019

Saunders, N., "Putting the Science in Science Fiction," Astronomy on Tap, Seattle, WA, Apr 2018

Saunders, N., "The Search for Habitable Worlds," Astrobiology Mini Talks, Museum of Flight, Seattle, WA, Apr 2018

POSTERS

Saunders, N., Luger, R., "Quantifying Biases with Simulated Kepler/K2 Exoplanet Light Curves," Kepler SciCon V, Glendale, CA, Mar 2019

Saunders, N., M. Gully-Santiago, C. Hedges, G. Barentsen, J. Dotson, "Exoplanet Science with the Lightkurve Python Package," AAS 233, Seattle, WA, Jan 2019