

# ETHAN A. KRUSE

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University of Maryland College Park  
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College Park, MD 20742

## EMPLOYMENT

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<b>CRESST Postdoctoral Fellow</b> University of Maryland	October 2021–Present College Park, MD
<b>NASA Postdoctoral Fellow</b> NASA Goddard Space Flight Center	September 2018–October 2021 Greenbelt, MD

## EDUCATION

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<b>University of Washington</b> Ph.D. in Astronomy Dissertation title: “A New Transiting Planet Search Applied to Kepler and K2: Discovery of Hundreds of Planet Candidates, Eclipsing Binary Stars, and a Self-lensing Binary System”	August 2018
<b>University of Washington</b> M.S. in Astronomy	December 2013
<b>Harvard University</b> B.A. cum laude in Astrophysics Minor in Computer Science	May 2012

## HONORS & AWARDS

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<b>NASA Special Act Award</b> For maximizing TESS Full Frame Image science	July 2020
<b>Blue Waters Graduate Fellow</b>	2017–2018
<b>National Science Foundation Graduate Research Fellowship</b>	2013–2016
<b>Harvard Hoopes Prize for Outstanding Senior Thesis</b>	2012

## RESEARCH EXPERIENCE

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<b>Doctoral Research</b> Dr. Eric Agol +) Discovering and characterizing the Kepler & K2 planet population, as well as discovering the first self-lensing binary system	2012–2018 Seattle, WA
<b>Senior Thesis</b> Dr. Darin Ragozzine +) Two semesters searching for circumbinary planets in the Kepler data	2011–2012 Cambridge, MA
<b>NRAO REU</b> Dr. Scott Ransom +) Extensive GPU coding with CUDA to develop a gamma-ray pulsar search of Fermi data	Summer 2011 Charlottesville, VA

**Space Telescope Science Institute REU**

Dr. Jason Tumlinson

+) HST spectral analysis on the COS-Halos team with focus on H<sub>2</sub> absorption analysis**Harvard PRISE Research Fellow**

Dr. Edo Berger

+) Short-term M-dwarf magnetic field variability using SDSS spectra

Summer 2010

Baltimore, MD

Summer 2009

Cambridge, MA

**TEACHING EXPERIENCE**

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**University of Washington TA**

+) Astronomy 101 with Dr. Chris Laws

+) Astronomy 101 with Dr. Oliver Fraser

+) Astronomy 150 with Dr. Toby Smith

Seattle, WA

Spring 2013

Winter 2013

Autumn 2012

**SCIENCE COMMUNICATION, OUTREACH, & SERVICE**

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Served on TESS Cycle 4 Review Panel

March 2021

Presented at AAS 237 [Press Conference](#)

January 2021

Created TESS Two Year [Panorama](#)

October 2020

Created TESS One Year [Panorama](#)

November 2019

Seattle Astronomy on Tap Invited Talk

August 2018

Seattle Astronomical Society Invited Talk

September 2016

Seattle Astronomy on Tap Invited Talk

April 2016

\$13,000 University of Washington STF Grant for Computing Resources

2016

[Kepler Animation](#) with 900,000+ Views Featured on [APOD](#)

December 2015

University of Washington Curriculum Review Committee

2015–2016

Moderator and Contributor on reddit [/r/AskScience](#)

2014–Present

University of Washington Faculty Search Committee

2014–2015

University of Washington Graduate Representative

2014–2016

[Science Podcast](#) Discussing KOI-3278

April 2014

Weekly arXiv Discussion Leader

2013–2016

Science Olympiad Event Coordinator

2009–2011

## FIRST AUTHOR PUBLICATIONS

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Citations compiled from [ADS](#) on 5 Aug 2022.

#	PAPER TITLE	First Author	N Authors	Journal	(Year)	Citations
3.	DETECTION OF HUNDREDS OF NEW PLANET CANDIDATES AND ECLIPSING BINARIES IN K2 CAMPAIGNS 0–8	<b>E. Kruse</b>	4	<i>ApJS</i>	(2019)	39
2.	KOI-3278: A SELF-LENSING BINARY STAR SYSTEM	<b>E. Kruse</b>	2	<i>Science</i>	(2014)	46
1.	CHROMOSPHERIC VARIABILITY IN SLOAN DIGITAL SKY SURVEY M DWARFS. II. SHORT-TIMESCALE H $\alpha$ VARIABILITY	<b>E. Kruse</b>	7	<i>ApJ</i>	(2010)	28

## CO-AUTHOR PUBLICATIONS

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Citations compiled from [ADS](#) on 5 Aug 2022.

#	PAPER TITLE	First Author	<b>E. Kruse</b> ..	of N Authors	Journal	(Year)	Citations
22.	THE NASA GSFC TESS FULL FRAME IMAGE LIGHT CURVE DATA SET	B. Powell	2	23	<i>RNAAS</i>	(2022)	<a href="#">arXiv</a>
21.	NINETY-SEVEN ECLIPSING QUADRUPLE STAR CANDIDATES DISCOVERED IN TESS FULL-FRAME IMAGES	V. Kostov	16	20	<i>ApJS</i>	(2022)	4
20.	THE LHS 1678 SYSTEM: TWO EARTH-SIZED TRANSITING PLANETS AND AN ASTROMETRIC COMPANION ORBITING AN M DWARF NEAR THE CONVECTIVE BOUNDARY AT 20 PC	M. Silverstein	10	51	<i>AJ</i>	(2022)	2
19.	VALIDATION OF 13 HOT AND POTENTIALLY TERRESTRIAL TESS PLANETS	S. Giacalone	23	111	<i>AJ</i>	(2022)	1
18.	TESS ECLIPSING BINARY STARS. I. SHORT-CADENCE OBSERVATIONS OF 4584 ECLIPSING BINARIES IN SECTORS 1–26	A. Prša	7	47	<i>ApJS</i>	(2022)	13
17.	MYSTERIOUS DUST-EMITTING OBJECT ORBITING TIC 400799224	B. Powell	17	27	<i>AJ</i>	(2021)	1
16.	TIC 172900988: A TRANSITING CIRCUMBINARY PLANET DETECTED IN ONE SECTOR OF TESS DATA	V. Kostov	30	86	<i>AJ</i>	(2021)	13
15.	NO TRANSITS OF PROXIMA CENTAURI PLANETS IN HIGH CADENCE TESS DATA	E. Gilbert	3	5	<i>FrASS</i>	(2021)	3

#	PAPER TITLE	First Author	<b>E. Kruse</b>	of N Authors	Journal	(Year)	Citations
14.	TIC 454140642: A COMPACT, COPLANAR, QUADRUPLE-LINED QUADRUPLE STAR SYSTEM CONSISTING OF TWO ECLIPSING BINARIES	V. Kostov	20	33	<i>ApJ</i>	(2021)	13
13.	IDENTIFYING PLANETARY TRANSIT CANDIDATES IN TESS FULL-FRAME IMAGE LIGHT CURVES VIA CONVOLUTIONAL NEURAL NETWORKS	G. Olmschenk	5	11	<i>AJ</i>	(2021)	6
12.	TIC 168789840: A SEXTUPLY-ECLIPSING SEXTUPLE STAR SYSTEM	B. Powell	7	51	<i>AJ</i>	(2021)	17
11.	EVEN MORE RAPIDLY ROTATING PRE-MAIN-SEQUENCE M DWARFS WITH HIGHLY STRUCTURED LIGHT CURVES: AN INITIAL SURVEY IN THE LOWER CENTAURUS-CRUX AND UPPER CENTAURUS-LUPUS ASSOCIATIONS	J. Stauffer	8	9	<i>AJ</i>	(2021)	3
10.	THE FIRST HABITABLE ZONE EARTH-SIZED PLANET FROM TESS. I: VALIDATION OF THE TOI-700 SYSTEM	E. Gilbert	19	95	<i>AJ</i>	(2020)	56
9.	A PLANET WITHIN THE DEBRIS DISK AROUND THE PRE-MAIN-SEQUENCE STAR AU MICROSCOPII	P. Plavchan	56	87	<i>Nature</i>	(2020)	93
8.	GRAVITY-DARKENING ANALYSIS OF THE MISALIGNED HOT JUPITER MASCARA-4 B	J. Ahlers	2	20	<i>ApJ</i>	(2020)	19
7.	K2-146: DISCOVERY OF PLANET C, PRECISE MASSES FROM TRANSIT TIMING, AND OBSERVED PRECESSION	A. Hamann	5	5	<i>AJ</i>	(2019)	18
6.	THE MASS OF THE WHITE DWARF COMPANION IN THE SELF-LENSING BINARY KOI-3278: EINSTEIN VERSUS NEWTON	D. Yahalomi	6	13	<i>ApJ</i>	(2019)	2
5.	THE L 98-59 SYSTEM: THREE TRANSITING, TERRESTRIAL-SIZE PLANETS ORBITING A NEARBY M DWARF	V. Kostov	12	115	<i>AJ</i>	(2019)	66
4.	AN UPDATE TO THE EVEREST K2 PIPELINE: SHORT CADENCE, SATURATED STARS, AND KEPLER-LIKE PHOTOMETRY DOWN TO $K_P = 15$	R. Luger	2	5	<i>AJ</i>	(2018)	114
3.	A SEVEN-PLANET RESONANT CHAIN IN TRAPPIST-1	R. Luger	3	33	<i>Nature Astronomy</i>	(2017)	223
2.	EVEREST: PIXEL LEVEL DECORRELATION OF K2 LIGHT CURVES	R. Luger	3	7	<i>AJ</i>	(2016)	199
1.	KEPLER-47: A TRANSITING CIRCUMBINARY MULTIPLANET SYSTEM	J. Orosz	31	39	<i>Science</i>	(2012)	265

## RESEARCH PRESENTATIONS

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14. POSTER. HUNDREDS OF THOUSANDS OF ECLIPSING BINARIES DISCOVERED THROUGH MACHINE LEARNING  
**E. Kruse** et al., *TESS Conference II*, (Virtual 2021).
13. TALK. HUNDREDS OF THOUSANDS OF ECLIPSING BINARIES DISCOVERED THROUGH MACHINE LEARNING  
**E. Kruse** et al., *AAS Meeting 237*, (Virtual 2021).
12. TALK. FINDING TESS'S "MISSING" PLANETS IN THE FULL FRAME IMAGES  
**E. Kruse** et al., *Chesapeake Bay Area Exoplanet Meeting*, (Virtual 2020).
11. POSTER. RAPID DISCOVERY OF FFI PLANETS IN THE CVZ TO ADD TO SHORT CADENCE  
**E. Kruse** et al., *TESS Science Conference I*, (Cambridge, MA 2019).
10. DISSERTATION TALK. HUNDREDS OF NEW PLANET CANDIDATES FROM K2  
**E. Kruse** et al., *AAS Meeting 233*, 408.07D (Seattle, WA 2019).
9. POSTER. K2 PLANET CANDIDATES IN CAMPAIGNS 0-8  
**E. Kruse** et al., *Kepler & K2 Science Conference IV* (Moffett Field, CA 2017).
8. TALK. HUNDREDS OF NEW K2 PLANET CANDIDATES  
**E. Kruse** et al., *Formation and Dynamical Evolution of Exoplanets* (Aspen, CO 2017).
7. POSTER. DOUBLING THE NUMBER OF K2 PLANET CANDIDATES  
**E. Kruse** et al., *Exoplanets I* (Davos, Switzerland 2016).
6. TALK. KEPLER'S MISSING PLANETS: USING QATS TO SEARCH FOR PLANETS WITH TTVs  
**E. Kruse** & E. Agol, *AAS Meeting 225*, 105.04 (Seattle, WA 2015).
5. TALK. DISCOVERY OF A NEW CLASS OF ECLIPSING BINARY  
E. Agol & **E. Kruse**, *University of Washington Astronomy Colloquium*, (Seattle, WA 2014).
4. POSTER. SEARCHING FOR EXTREME TTV PLANETS WITH QATS  
**E. Kruse** & E. Agol, *Kepler Science Conference II*, 1.307 (Moffett Field, CA 2013).
3. TALK. A SYSTEMATIC SEARCH FOR CIRCUMBINARY PLANETS  
**E. Kruse**, *Exoplanets in Multi-planet Systems in the Kepler Era* (Aspen, CO 2013).
2. POSTER. SPEEDING UP BLIND GAMMA-RAY PULSAR SEARCHES WITH GPUS  
**E. Kruse** & S. Ransom, *AAS Meeting 219*, 237.05 (Austin, TX 2012).
1. POSTER. COS OBSERVATIONS OF MOLECULAR H<sub>2</sub> AT  $z = 0.248$   
**E. Kruse**, J. Tumlinson, C. Thom, K. Sembach, *AAS Meeting 217*, 335.09 (Seattle, WA 2011).

## SELECT PRESS COVERAGE

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- + ) [NASA's TESS Presents Panorama of Southern Sky](#)
- + ) [Scientific American: One Search to \(Almost\) Rule Them All: Hundreds of Hidden Planets Found in Kepler Data](#)
- + ) [The Planetary Report: A Kepler Orrery](#)
- + ) [Astronomy Picture of the Day \(APOD\): Kepler Orrery IV](#)
- + ) [Scientific American: White Dwarf Acts as Cosmic Magnifying Glass](#)
- + ) [Tech Times: KOI-3278, a bizarre 'self-lensing' binary star system, discovered in Lyra](#)
- + ) [Gizmodo: A Mesmerizing Animation Shows Just How Weird Our Solar System Is](#)