

GUÐMUNDUR KÁRI STEFÁNSSON, PHD — CV

HENRY NORRIS RUSSELL POSTDOCTORAL FELLOW

Department of Astrophysical Sciences
124 Peyton Hall, Princeton University
4 Ivy Ln, Princeton, 08540 NJ, USA

email: gstefansson@astro.princeton.edu
web: gummiks.github.io
nationality: Icelandic

EDUCATION

2013-2019	Penn State University: Ph.D., Astronomy & Astrophysics (advisor: Suvrath Mahadevan) — Thesis: <i>Extreme Precision Photometry and Radial Velocimetry from the Ground</i>
2012	Stanford University: Summer International Honors Program
2010-2013	University of Iceland: B.S., Physics (Thesis: <i>Observational Constraints on Dark Energy</i>)

APPOINTMENTS

2019-2022	Henry Norris Russell Postdoctoral Fellow Department of Astrophysical Sciences, Princeton University [Advisor: Dr. Joshua Winn]
2016-2019	NASA Earth and Space Science Fellow Dept. of Astronomy & Astrophysics, Penn State University [Advisor: Dr. Suvrath Mahadevan]
2015-2016	Leifur Eiriksson Research Fellow Dept. of Astronomy & Astrophysics, Penn State University [Advisor: Dr. Suvrath Mahadevan]
2013-2014	Teaching Assistant in Astrophysics Dept. of Astronomy & Astrophysics, Penn State University
2013	CERN Summer Research: ISOLDE Experiment European Organization for Nuclear Research, CERN [Advisor: Dr. María Borge]
2011-2013	Undergraduate Researcher in Nanophotonics Department of Physics, University of Iceland [Advisor: Dr. Kristján Leósson]

INSTRUMENTS & COLLABORATIONS

The Habitable-zone Planet Finder | Deputy Project Scientist

Near-infrared (NIR) spectrograph on the 10m Hobby-Eberly Telescope. I currently lead the HPF 5-year survey. Using my RV extraction pipeline, we have demonstrated some of the highest RV precision in the NIR (1.5m/s). I led and co-led the design and testing of a number of subsystems (e.g., environmental control system, fiber-feed).

NEID | Instrument & Science Team Member

The NASA-NSF precision RV spectrograph on the WIYN 3.5m telescope with a ~ 30 -50cm/s RV precision. I led and co-led the design and testing of a number of subsystems. My template matching pipeline has demonstrated ~ 50 cm/s RV precision on nearby stars with NEID. I am currently leading a number of NEID science programs.

KPF | Science Team Member

I am a member of the science team of the Keck Planet Finder, the next-generation RV spectrograph for the Keck-I telescope.

Space-Quality Photometry with Engineered Diffusers | NSF-funded collaboration

I pioneered the use of Engineered Diffusers to achieve some of the highest precision photometry from the ground.

SELECT AWARDS & HONORS

2021	Robert J. Trumpler Award , for an unusually important PhD Thesis to Astronomy
2016-2019	NASA Earth and Space Science Fellowship (NESSF)
2016,18,19	Zaccheus Daniel Travel Award , Penn State
2017	Downsbrough Graduate Fellowship , Penn State
2015	Stephen B. Brumbach Fellowship in Astrophysics , Penn State
2015	Leifur Eiriksson Foundation Fellowship
2014	TA of the Year , Penn State
2013	G. P. Bjarnason Scholarship , Univ. Iceland
2013	Braddock-Roberts Fellowship , Penn State
2013	Fulbright Fellowship , PhD program at Penn State
2010	41st International Physics Olympiad IPHO , honorable mention

SELECT PROFESSIONAL TALKS

1. 2022/03/10: **Invited Colloquium**, University of California Berkeley
2. 2022/03/10: **Invited Seminar**, University of California Berkeley
3. 2022/02/22: **Invited Bahcall Lunch Talk**, Princeton University
4. 2022/01/27: **Invited Colloquium**, Yale University (online)
5. 2021/09/09: **Invited Colloquium**, University of Oklahoma (online)
6. 2021/06/03: **Invited Talk**, Princeton Astrophysics Advisory Council (online)
7. 2021/04/07: **Invited Seminar**, University of Pennsylvania (online)
8. 2020/10/29: **Invited Seminar**, NASA Goddard Space Flight Center (online)
9. 2020/10/15: **Invited Thunch Seminar**, Princeton University (online)
10. 2020/03/11: **Invited Seminar**, Center for Computational Astrophysics, New York, NY, USA
11. 2019/08/20: Contributed Talk, Extreme Solar Systems IV, Reykjavik, Iceland
12. 2019/03/21: Contributed Talk, Extreme Precision Radial Velocities IV, Grindelwald, Switzerland
13. 2019/01/08: Dissertation Talk, 233rd AAS Meeting, Seattle, WA, USA
14. 2019/01/08: **Invited talk, NESSF Special Session**, 233rd AAS Meeting, Seattle, WA, USA
15. 2018/09/17: Exoplanet Seminar, Princeton University, NJ, USA
16. 2018/09/14: **Invited Seminar**, Space Sciences Lab, Berkeley, CA, USA
17. 2018/09/12: **Invited Exoplanet Seminar**, California Institute of Technology, CA, USA
18. 2018/09/10: Exoplanet Seminar, Center for Exoplanets and Habitable Worlds, Penn State, PA, USA
19. 2018/06/22: Contributed Talk, Emerging Researchers in Exoplanet Science IV, Penn State, PA, USA
20. 2017/08/15: **Invited Breakout Session**, Extreme Precision Radial Velocities III, Penn State, USA
21. 2017/08/14: Contributed Talk, Extreme Precision Radial Velocities III, Penn State, USA
22. 2017/01/05: Contributed Talk, Icelandic Astronomical Society Meeting, Reykjavik, Iceland
23. 2016/06/12: Contributed Talk, Emerging Researchers in Exoplanet Science II, Cornell, NY, USA
24. 2015/05/28: Contributed Talk, Emerging Researchers in Exoplanet Science I, Penn State, PA, USA

MENTORING

2020+	Sinclair Jones Undergraduate at Princeton. 2x Junior Projects, Senior Thesis advisor.
2019+	Shubham Kanodia Graduate Student at Penn State. Planet Detection, Instrumentation.
2019+	Caleb Cañas Graduate Student at Penn State. Planet Detection & Characterization.
2018+	Marissa Maney Undergraduate at Penn State. Transits & instrumentation. Now at Harvard.
2016-18	Yiting Li Undergraduate at Penn State. Transits & instrumentation. Now at UCSB.
2015-17	David Conrad Undergraduate at Penn State. Instrumentation. Now at RIT.

TEACHING

2013,14	INSTRUCTOR OF RECORD , Astro 11, Penn State
2014	TA , Planetarium, Davey Lab Observatory Observing, Penn State
2014	TA & GUEST LECTURER , Astro 1, Astro 5, Astro 6, Penn State
2013,14	TA & GUEST LECTURER , Astro 1, 5, 6, 10, Planetarium Shows, Penn State
2012,13	TA , Physics 2, Physics-305G, Experimental Physics Lab, Classical Mechanics, Uni. Iceland
2012	TA , Classical Mechanics, Uni. Iceland
2012	PRIVATE TUTOR , Physics 1V, Nobel 101

PRESS RELEASES

Nov 2020	In the Mysterious Blue Ring Nebula, Scientists See the Fate of Binary Stars — Princeton
Aug 2020	Surprisingly Dense Exoplanet Challenges Planet Formation Theories — NOIRLab
Feb 2020	Sub-Neptune-sized planet validated with the Habitable-zone Planet Finder — Penn State
Jan 2020	A New Tool for 'Weighing' Unseen Planets — NASA/JPL
Oct 2017	Press Release on Engineered Diffuser Technology — Penn State

SELECT OUTREACH

Feb 2021	Amateur Astronomy Association of Princeton: Talk on Exoplanets and Instrumentation
Jan 2020	Nobel Prize in Physics: Exoplanets Public talk, National History Museum of Iceland
Current (2014+)	HPF & NEID Blogs: (hpf.psu.edu): 10 articles, and 4 videos
2017, 2019, 2021	Radio Interviews: <i>Morgunútvarpið</i> , <i>Samfélagið</i> , Icelandic public radio
2017, 2019, 2021	Newspaper Interviews: <i>Vísir</i> , Icelandic newspaper
2017	Solar Eclipse Viewing: Volunteering during solar eclipse on August 21st
2014-2016	@astrobites: Wrote > 20 articles, a daily astronomy literature journal
2014, 2015	Public Observing: Numerous nights with 10", 12", and 24" telescopes, Penn State
2013, 2014, 2015	Astro-Fest, Astro-Night: Public observing, planetarium, make-a-comet, Penn State
2013, 2014, 2015	Astro-Night: Public observing, planetarium, Penn State
2014	Exploration U: Community Science Night, State College
2012, 2013	University Day: Experimental Physics Demonstrations, Uni. Iceland

SELECT ACADEMIC SERVICE

Review Panels	NASA Extreme Precision Radial Velocity Foundation Science Proposals, March 2021
Referee	MNRAS, A&A, ApJL
Membership	American Astronomical Society, Astronomical Society of Iceland, SPIE
Organizer	Emerging Researchers in Exoplanet Science I, IV, V , Penn State 2015, 2018, Princeton 2021 Extreme Solar Systems IV , Reykjavík, Iceland, August, 2019 Extreme Precision Radial Velocities IV , Penn State, August 14-17, 2017

List of Publications — Guðmundur Stefánsson

55 Total, 38 Peer Review Papers, 1 in Nature.

1st Author (10 Total, 7 Peer Review Papers, 1 in review)

10. [Stefánsson et al. 2022, ApJL \(in review\)](#)
The Warm Neptune GJ 3470b has a Polar Orbit.
9. [Stefánsson, et al. 2020, AJ, 160, 6,](#)
A Mini-Neptune and a Radius-Valley-Planet Orbiting the Nearby M2 dwarf TOI-1266 in its Venus-Zone: Validation with the Habitable-zone Planet Finder.
8. [Stefánsson, et al. 2020, AJ, 160, 192,](#)
The Habitable-zone Planet Finder Reveals A High Mass and a Low Obliquity for the Young Neptune K2-25b.
7. [Stefánsson, et al. 2020, AJ, 159, 100,](#)
A sub-Neptune sized planet transiting the M2.5-dwarf G 9-40: Validation with the Habitable-zone Planet Finder.
6. [Stefánsson, et al. 2018, AJ, 156, 266,](#)
Diffuser-assisted Photometric Follow-up Observations of the Neptune-sized Planets K2-28b and K2-100b.
5. [Stefánsson, et al. 2018, SPIE Conference Series, Vol. 10702,](#)
Extreme precision photometry from the ground with beam-shaping diffusers for K2, TESS, and beyond.
4. [Stefánsson, et al. 2017, ApJ 848, 9,](#)
Toward Space-like Photometric Precision from the Ground with Beam-shaping Diffusers.
3. [Stefánsson, et al. 2016, ApJ 833, 175,](#)
A Versatile Technique to Enable Sub-milli-Kelvin Instrument Stability for Precise Radial Velocity Measurements: Tests with the Habitable-zone Planet Finder.
2. [Stefánsson, et al. 2016, SPIE Conference Series, 9908, 990871,](#)
Ultra-stable temperature and pressure control for the Habitable-zone Planet Finder spectrograph.
1. [Stefánsson, et al. 2011, Raust, 8, 1,](#)
Sambætting vökvarása og ljósrása á örflögum (English: Fabrication of integrated optical and microfluidic devices).

2nd and 3rd Author (18 Total, 15 Peer Review Papers)

18. [Harman, Kopparapu, Stefánsson et al. 2021, PSJ \(accepted\)](#)
A Snowball in Hell: The Potential Steam Atmosphere of TOI-1266c
17. [Vissapragada, Stefánsson, Greklek-McKeon et al. 2021, AJ \(accepted\),](#)
A Search for Planetary Metastable Helium Absorption in the V1298 Tau System.
16. [Kanodia, Stefánsson, Cañas et al. 2021, AJ, 162, 135,](#)
TOI-532b: The Habitable-zone Planet Finder confirms a Large Super Neptune in the Neptune Desert orbiting a metal-rich M dwarf host.
15. [Krishnamurthy, Hirano, Stefánsson et al. 2021, AJ, 162, 82,](#)
Non-detection of Helium in the upper atmospheres of TRAPPIST-1b, e and f.
14. [Lubin, Robertson, Stefánsson et al. 2021, AJ 162, 61,](#)
Stellar Activity Manifesting at a One Year Alias Explains Barnard b as a False Positive.

13. [Mahadevan, Stefánsson, Robertson et al. 2021, ApJL, 919, 9,](#)
The Habitable-zone Planet Finder Detects a Terrestrial-mass Planet Candidate Closely Orbiting Gliese 1151: The Likely Source of Coherent Low-frequency Radio Emission from an Inactive Star.
12. [Cañas, Stefánsson, Kanodia, et al. 2020, AJ, 160, 147,](#)
A warm Jupiter transiting an M dwarf: A TESS single transit event confirmed with the Habitable-zone Planet Finder.
11. [Kanodia, Cañas, Stefánsson et al. 2020, ApJ, 899, 29,](#)
TOI-1728b: The Habitable-zone Planet Finder confirms a warm super Neptune orbiting an M dwarf host.
10. [Robertson, Stefánsson, Mahadevan, et al. 2020, ApJ, 897, 125,](#)
Persistent starspot signals on M dwarfs: multi-wavelength Doppler observations with the Habitable-zone Planet Finder and Keck/HIRES.
9. [Ninan, Stefánsson, Mahadevan, et al. 2020, ApJ, 894, 97,](#)
Evidence for He I 10830 Å absorption during the transit of a warm Neptune around the M-dwarf GJ 3470 with the Habitable-zone Planet Finder.
8. [Ninan, Mahadevan, Stefánsson et al. 2019, ISPA 2018,](#)
Impact of crosshatch patterns in H2RGs on high precision radial velocity measurements: Exploration of measurement and mitigation paths with HPF.
7. [Kanodia, Wolfgang, Stefánsson, et al. 2019, ApJ 882, 38,](#)
Mass-Radius relationship for M dwarf exoplanets: Comparing nonparametric and parametric methods.
6. [von Essen, Stefánsson, Mallon, et al. 2019, A&A, 628, 11,](#)
First Light of Engineered Diffusers at the Nordic Optical Telescope Reveal Time Variability in the Optical Eclipse Depth of WASP-12b.
5. [Cañas, Stefánsson, Monson, et al. 2019, ApJL 877, 29,](#)
TOI-150: A transiting hot Jupiter in the TESS southern CVZ.
4. [Robertson, T. Anderson, G. Stefánsson, et al. 2019, JATIS, 015003,](#)
Ultrastable environment control for the NEID spectrometer: design and performance demonstration.
3. [Li, Stefánsson, Robertson, et al. 2017, RNAAS, 1, 49,](#)
A Candidate Transit Event around Proxima Centauri.
2. [Bender, Robertson, Stefánsson et al. 2016, SPIE, 9913, 991338,](#)
The instrument control software package for the Habitable-Zone Planet Finder spectrometer.
1. [Slovinsky, Stefánsson, Kossoy et al. 2013, Plasmonics 8.4, 1613,](#)
Propagation Loss of Long-Range Surface Plasmon Polariton Gold Stripe Waveguides in the Thin-Film Limit.

Other Coauthor (27 Total, 16 Peer Reviewed, 3 in Review)

27. [Cañas \(including Stefánsson\) et al. 2022, AJ \(in review\)](#)
Two gas giants transiting M dwarfs confirmed with HPF and NEID
26. [Terrien \(including Stefánsson\) et al. 2022, ApJ, 927, 11](#)
Rotational Modulation of Spectroscopic Zeeman Signatures in Low-mass Stars
25. [Lin \(including Stefánsson\) et al. 2022, ApJ \(in review\)](#)
Observing the Sun as a star: Design and early results from the NEID solar feed
24. [Wang \(including Stefánsson\) et al. 2022, ApJL \(in review\)](#)
SOLES II: The Aligned Orbit of WASP-148b, the Only Known Hot Jupiter with a Nearby Warm Jupiter Companion, from NEID and HIRES.

23. [Bouma \(including Stefánsson\) et al. 2022, AJ \(accepted\)](#)
A 38 Million Year Old Neptune-Sized Planet in the Kepler Field
22. [Cañas \(including Stefánsson\) et al. 2021, AJ \(accepted\)](#)
A Hot Mars-sized Exoplanet Transiting an M Dwarf
21. [Cañas \(including Stefánsson\) et al. 2021, AJ \(accepted\)](#)
An eccentric Brown Dwarf eclipsing an M dwarf
20. [Kanodia \(including Stefánsson\) et al. 2021, ApJ \(accepted\)](#)
High Resolution Near-infrared Spectroscopy of a Flare around the Ultracool Dwarf vB 10
19. [Terrien \(including Stefánsson\) et al. 2021, AJ, 161, 252.](#)
Broadband Stability of the Habitable Zone Planet Finder Fabry-Pérot Etalon Calibration System: Evidence for Chromatic Variation.
18. [Seifahrt \(including Stefánsson\) et al. 2021, SPIE, 11447.](#)
On-sky commissioning of MAROON-X: A new precision radial velocity spectrograph for Gemini North.
17. [Kanodia \(including Stefánsson\) et al. 2021, ApJ, 912, 15.](#)
A Harsh Test of Far-field Scrambling with the Habitable-zone Planet Finder and the Hobby-Eberly Telescope.
16. [Tran \(including Stefánsson\) et al. 2021, AJ, 161, 173.](#)
The Epoch of Giant Planet Migration Planet Search Program. I. Near-Infrared Radial Velocity Jitter of Young Sun-like Stars.
15. [Gupta \(including Stefánsson\) et al. 2021, AJ, 161, 130.](#)
Target Prioritization and Observing Strategies for the NEID Earth Twin Survey.
14. [Schwab \(including Stefánsson\) et al. 2020, SPIE, 11447.](#)
The NEID spectrometer: fibre injection system design.
13. [Kanodia \(including Stefánsson\) et al. 2020, SPIE, 11447.](#)
Ghosts of NEID's past.
12. [Hoadley \(including Stefánsson\) et al. 2020, Nature, 587, 387-391.](#)
A blue ring nebula from a stellar merger several thousand years ago.
11. [Obermeier \(including Stefánsson\) et al. 2020, A&A, 639, 130.](#)
Following the TraCS of exoplanets with Pan-Planets: Wendelstein-1b and Wendelstein-2.
10. [Roy \(including Stefánsson\) et al. 2020, AJ, 159, 161.](#)
Solar Contamination in Extreme-precision Radial-velocity Measurements
9. [Lam \(including Stefánsson\) et al. 2020, AJ, 159, 120.](#)
It takes two planets in resonance to tango around K2-146.
8. [Metcalf \(including Stefánsson\) et al. 2019, Optica, 6, 233.](#)
Stellar Spectroscopy in the Near-infrared with a Laser Frequency Comb.
7. [Kanodia \(including Stefánsson\) et al. 2018, SPIE, 10702.](#)
Overview of the spectrometer optical fiber feed for the habitable-zone planet finder.
6. [Ninan \(including Stefánsson\) et al. 2018, SPIE, 10709.](#)
The Habitable-Zone Planet Finder: improved flux image generation algorithms for H2RGs
5. [Halverson \(including Stefánsson\) et al. 2016, SPIE 9908, 99086.](#)
A comprehensive radial velocity error budget for next generation Doppler spectrometers.
4. [Robertson \(including Stefánsson\) et al. 2016, SPIE, 9908, 990862.](#)
A system to provide sub-milliKelvin temperature control at T 300K for extreme precision optical radial velocimetry.
3. [Schwab \(including Stefánsson\) et al. 2016, SPIE, 9912, 991274.](#)
Adaptive optics fed single-mode spectrograph for high-precision Doppler measurements in the near-infrared.

2. [Hearty \(including Stefánsson\) et al. 2014, SPIE, 9147, 914752,](#)
Environmental control system for Habitable-zone Planet Finder (HPF).
1. [Mahadevan \(including Stefánsson\) et al. 2014, SPIE, 9147,](#)
The Habitable-zone Planet Finder: A status update on the development of a stabilized fiber-fed near-infrared spectrograph for the for the Hobby-Eberly telescope.