

William R. Saunders

Norfolk, VA 23510
william.r.saunders(at)nasa.gov
williamrsaunders.com

NASA Planetary Scientist and Astronomy PhD (2024) with expertise in using Earth-based stellar occultations to study the upper atmospheres of Uranus and Neptune. Additional experience in modeling planetary atmospheres, observing on large telescopes, and statistical analysis. Extensive presentation and public speaking experience.

EMPLOYMENT	Planetary Scientist	June 2024 - Present
	NASA Langley Research Center, Hampton, VA Analytical Mechanics Associates (AMA), Hampton, VA Advisor: Kunio Sayangi (NASA Langley), Kirk Ayers (AMA)	
	Graduate Research Fellow	Sept. 2018 - May 2024
	Boston University, Boston MA Advisor: Paul Withers (BU), Michael Person (MIT) Topics: Stellar occultations, Mars atmosphere, Uranus atmosphere	
EDUCATION	Boston University , Boston, MA	
	Ph.D. in Astronomy	Defended Feb. 2024, Graduation May 2024
	NASA FINESST Fellow Advisor: Paul Withers GPA: 3.96/4	
	Boston University , Boston, MA	
	M.A. in Astronomy	May 2020
	University of Pennsylvania , Philadelphia, PA	
	B.A. in Physics & Astronomy, <i>summa cum laude</i> with major honors Advisor: Gary Bernstein Minors: Mathematics, History GPA: 3.81/4	May 2018
LARGE GRANTS	NASA Solar System Observations (Science PI Saunders, \$295k)	2025-2028
	<i>April 08, 2025 Uranus Stellar Occultation: Multi-Observatory Campaign to Determine Stratospheric Temperature Structure</i>	
	Future Investigators in NASA Earth and Space Science and Technology Fellowship (FINESST) (FI Saunders, \$100k)	2022-2024
	<i>Uranus and Neptune Stellar Occultations: Understanding Their Atmospheric Thermal Structure</i>	
HONORS AND AWARDS	Best Presentation Award, International Planetary Probe Workshop	2024
	1st Place: Poyiadjis Hospitality Innovation Competition (\$5,000)	2024
	Future Investigators in NASA Earth and Space Science and Technology Fellowship (FINESST) Winner (\$100,000)	2022-2024
	American Geophysical Union Dewan Young Scholarship Winner	2022-2023
	Massachusetts Space Grant Consortium Graduate Fellowship	May - August 2022
	Massachusetts Space Grant Consortium Graduate Fellowship	Jan - May 2022

DPS Outreach and Education Grant, astro[sound]bites	2021 - 2022
AGU Sharing Science Grant, astro[sound]bites	2021
Summer Professional Development Fellowship, Boston University	May - Aug. 2021
DPS Outreach and Education Grant, astro[sound]bites	2020 - 2021
Massachusetts Space Grant Consortium Graduate Fellowship	May - Aug. 2021
Massachusetts Space Grant Consortium Graduate Fellowship	May - Aug. 2020
NSF Graduate Research Fellowship Honorable Mention	April 2020
AGU Outstanding Student Presentation Award (awarded to top 3.5%)	Dec. 2019
Pennsylvania Space Grant Consortium Undergraduate Scholarship	2017 - 2018
University Scholar (For Advanced Undergraduate Researchers)	2015 - 2018
Dean's List	2014 - 2018
University Physics Competition Silver Medalist	Jan. 2016
National Merit Scholar (awarded to 8,000 high school seniors)	2014

TEACHING POSITIONS

Instructor of Record Boston University, Boston MA AS 102: The Astronomical Universe	July - Aug. 2022
Teaching Fellow Boston University, Boston MA AS 100: Cosmic Controversies	Jan. 2021 - May 2021
Teaching Fellow Boston University, Boston MA AS 102: The Astronomical Universe	Sep. 2021 - Dec. 2021

PEER- REVIEWED PUBLICATIONS

First Author

4. **Saunders, W.**, Person, M., Withers, P., French, R., Tubthong, C., (2024). The Upper Atmosphere of Uranus from Stellar Occultations II: Revised Temperatures in the Upper Stratosphere and Lower Thermosphere. *Planetary Science Journal*. doi.org/10.3847/PSJ/ad7c4d.
3. **Saunders, W.**, Person, M., Withers, P., French, R., Tubthong, C., (2023). The Upper Atmosphere of Uranus from Stellar Occultations I: Methods and Validation. *Planetary Science Journal*. doi.org/10.3847/PSJ/acfd27.
2. **Saunders, W.**, Person, M., Withers, P., Sayanagi, K., Young, C., Randall, C., Valle, T. (2022). Assessment of the Feasibility of Space-Based Stellar Occultation Observations of Uranus and Neptune. *Planetary and Space Science*. doi.org/10.1016/j.pss.2022.105431.
1. **Saunders, W.**, Person, M., Withers, P., (2021). Observations of Gravity Waves in the Middle Atmosphere of Mars. *The Astronomical Journal*. doi.org/10.3847/1538-3881/abf1ef.

Co-Author

3. Sayanagi, K., Garland, J., **Saunders, W.** (2026, in press.). *Atmospheres of Giant Planets*. Elsevier.
2. Bernardinelli, P., Bernstein, G., Sako, M., Hamilton, S., Gerdes, D., Adams, F., **Saunders, W.**, ... (2021). Testing the Isotropy of the Dark Energy Survey's Extreme Trans-Neptunian Objects. *The Planetary Science Journal*.
1. Bernardinelli, P., Bernstein G., Sako, M., Liu, T., **Saunders, W.**, ... (2020). Trans-Neptunian Objects Found in the First Four Years of the Dark Energy

Survey. The Astrophysical Journal.

CONFERENCE PRESENTATIONS	First Author, Research	
	19. (Poster) <i>Preliminary Uranus Atmospheric Results from the 2025 Stellar Occultation Campaign</i> AGU Meeting, New Orleans, LA.	Dec. 2025
	18. (Talk) <i>Uranus Stellar Occultation 2025: Report and Preliminary Results from the Largest Uranus Stellar Occultation Campaign</i> EPSC-DPS Meeting, Helsinki, Finland.	Sep. 2025
	17. (Talk) <i>Stellar Occultation Observations to Constrain the Stratosphere of Uranus for Aerocapture</i> AGU Meeting, Washington, D.C.	Dec. 2024
	16. (Talk) <i>Stellar Occultation Observations to Constrain the Stratosphere of Uranus for Aerocapture</i> International Planetary Probe Workshop, Williamsburg, VA. Received Best Presentation Award	June 2024
	15. (Poster) <i>Revised Upper Atmospheric Temperatures and the Need to Understand Magnetosphere-Ionosphere-Thermosphere Interactions at Uranus</i> Uranus Flagship Meeting, Greenbelt, MD.	May 2024
	14. (Poster) <i>The Atmosphere of Uranus from Stellar Occultations: Revised Temperatures in the Stratosphere and Lower Thermosphere</i> AGU Meeting, San Francisco, CA.	Dec. 2023
	13. (Dissertation talk) <i>The Upper Atmosphere of Uranus from Stellar Occultations</i> DPS Meeting, San Antonio, TX.	Oct. 2023
	12. (Poster) <i>Revised Temperatures in the Upper Stratosphere and Lower Thermosphere of Uranus</i> Uranus Flagship Meeting, Pasadena, CA.	Jul. 2023
	11. (Poster) <i>Uranus' Lower Themosphere is Cooler than Previously Thought</i> AGU Winter Meeting, Chicago, IL.	Dec. 2022
	10. (Oral) <i>Uranus' Lower Themosphere is Cooler than Previously Thought</i> NASA Outer Planets Assessment Group, Houston, TX.	Nov. 2022
	9. (Poster) <i>Uranus Upper-Atmospheric Temperatures from Stellar Occultations</i> EPSC meeting, Granada, Spain.	Sep. 2022
	8. (Poster) <i>The Feasibility of Space-Based Stellar Occultation Observations of Uranus and Neptune</i> AGU Winter Meeting, New Orleans, LA.	Dec. 2021
	7. (Invited Talk) <i>Observations of Gravity Waves in the Middle Atmosphere of Mars</i> AGU Winter Meeting, virtual	Dec. 2020
	6. (Talk) <i>Measuring the Stratospheric Temperature of Uranus Using Archival Stellar Occultations</i> AGU Winter Meeting, virtual.	Dec. 2020

5. (Talk) *Re-Analysis of the 1976 Mars Occultation of Epsilon Geminorum: Detection of Gravity (Buoyancy) Waves* Oct. 2020
EPSC Meeting, virtual.
4. (Poster) *Re-Analysis of the 1976 Mars Occultation of Epsilon Geminorum* Dec. 2019
AGU Winter Meeting, San Francisco, CA
Winner of the Outstanding Student Presentation Award
3. (Poster) *Initial Results of a Re-Analysis of the 1976 Mars Occultation of Epsilon Geminorum* July 2019
Ninth International Conference on Mars, Pasadena, CA
2. (Poster) *Impact of Ice on the Evolution of Protoplanetary Disks and Formation of Planetary Systems* Jan. 2018
AAS Winter Meeting, Washington, D.C.
1. (Talk) *Optimizing Difference Imaging to Identify Trans-Neptunian Objects using the Dark Energy Survey* Aug. 2016
Astrophilly Conference, Villanova, PA

Outreach

5. (Co-Convener) *Listening to Our World: Sonification Applications in Research, Education, and Outreach* Dec. 2022
AGU Winter Meeting, Chicago, IL.
4. (Talk) *Astro[sound]bites: A new audio resource for informal education* Nov. 2021
Workshop on Astronomy Beyond the Common Senses, virtual.
3. (Talk) *Astro[sound]bites: A new audio resource for conveying recent astronomy research* May 2021
Communicating Astronomy with the Public, virtual.
2. (iPoster and Talk) *Astro[sound]bites: A new audio resource for conveying recent astronomy research* Jan. 2021
AAS Winter Meeting, virtual
Conference proceeding in the Bulletin of the AAS
1. (Talk) *Astro[sound]bites: A new audio resource for conveying recent astronomy research* Oct. 2020
DPS Annual Meeting, virtual.

CONFERENCE PROCEEDINGS

2. **Saunders, W.**, Rice, M., Gagliano, A. (2022). ASTRO[SOUND]BITES: AN AUDIO RESOURCE FOR INFORMAL EDUCATION. 2nd Workshop on Astronomy Beyond the Common Senses for Accessibility and Inclusion. http://www.astroscu.unam.mx/rmaa/RMxAC..54/PDF/RMxAC..54_WSaunders-XIV.pdf.
1. Gagliano, A., Rice, M., **Saunders, W.** (2021). Astro[sound]bites: a New Audio Resource for Conveying Recent Astronomy Research. ASP Conference Series, 531, 111-117. <http://aspbooks.org/publications/531/111.pdf>.

INVITED TALKS & COLLOQUIA

6. *Presenter and panelist: Uranus section* Aug. 2024
AMA Research and Science Symposium, Hampton, VA
5. *Revised Temperatures for Uranus' Upper Stratosphere and Lower Thermosphere* Nov. 2022
Johns Hopkins University Applied Physics Laboratory, Laurel, MD

	4. <i>The Shadow Chaser: A Mission Concept to Observe Uranus and Neptune Stellar Occultations</i> NASA Langley Research Center, Hampton, VA	Jan. 2022
	3. <i>The Shadow Chaser: A Mission Concept to Observe Uranus and Neptune Stellar Occultations</i> Hampton Univ., Hampton, VA	Nov. 2021
	2. <i>Impact of Ice on the Evolution of Protoplanetary Disks and Formation of Planetary Systems</i> Meeting of the National Astrobiology Institute, NASA Ames Research Center, CA	Aug. 2017
	1. <i>Optimizing Difference Imaging to Identify Trans-Neptunian Objects using the Dark Energy Survey</i> (plenary talk) Yale Undergraduate Research Conference, New Haven, CT	Feb. 2017
OUTREACH TALKS	2. <i>Hey, You're in the Way: Measuring Planet Atmospheres When They Align with Stars</i> Astronomy on Tap – Lansing, MI	July 2020
	1. <i>Hey, You're in the Way: Measuring Planet Atmospheres When They Align with Stars</i> CAS Public Talks, Boston University, Boston, MA	May 2020
OTHER EXPERIENCE	GradGather Co-Founder <ul style="list-style-type: none"> • gradgather.com and GradGather mobile application. • Venture started at Boston University to help connect grad students in small conversation groups. • 1st Place: Poyiadjis Hospitality Innovation Competition, Student Wellbeing Track (2024). • Thousands of students have participated since 2023. 	Sep. 2022 - Present
SCIENCE OUTREACH	astro[sound]bites Podcast Co-Founder and Co-Host <ul style="list-style-type: none"> • Bi-weekly podcast companion to Astrobites.org. • Co-hosted 91 episodes with Malena Rice, Alex Gagliano, Kiersten Boley, Sabrina Berger, and Cormac Larkin. • Available on astrosoundbites.com, Apple Podcasts, Google Play, SoundCloud, Spotify, Amazon Music, and Audible. • Podcast continues with new co-hosts. 	Nov. 2019 - May 2024
	Brainspace Magazine Astronomy Contributor <ul style="list-style-type: none"> • <i>Brainspace</i> is a quarterly science magazine aimed at children ages nine to fourteen with a readership of approximately 40,000. 	2019 - 2022
	<u>Published Works</u> “It’s Pi Time” “Thinking Small: The CubeSat Revolution” “Cloudy with a Chance of Bacteria” “Where did the Moon Come From?” “Bringing Home a Piece of Mars” “Solar Storms”	Spring 2022 Fall 2021 Spring 2021 Fall 2020 Winter 2019 - 2020 Fall 2019
	Astrobites Administrative Committee	2021 - 2022

	<ul style="list-style-type: none"> • Developed the first Astrobites webinar panel event: "How to Find an Advisor" in March 2021. • Panel attended and viewed by over 40 participants. 	
	ComSciCon Atlanta Podcasting Expert	Feb. 2022
	ComSciCon Flagship	Aug. 2021
	<ul style="list-style-type: none"> • Flagship science communication conference for graduate students. • Selected as attendee in 2021. 	
	Astrobites Undergraduate Chair	2020 - 2021
	<ul style="list-style-type: none"> • Developed the first Astrobites webinar panel event: "How to Find an Advisor" in March 2021. • Panel attended and viewed by over 40 participants. 	
	Astrobites Writing Contributor	2019 - 2021
	<ul style="list-style-type: none"> • Astrobites is a graduate-student run website that summarizes recent astronomy research at an undergraduate level. • Writers publish monthly, and peer-review others' publications. 	
	Research Peer Advisor	2016 - 2018
	<ul style="list-style-type: none"> • Center for Undergraduate Research and Fellowships, University of Pennsylvania • Advise undergraduates on first steps to beginning original research. 	
MEDIA APPEARANCES	REACH, a Science Podcast for Kids	March 2022
	Recorded a segment on artificial satellites and the CubeSat revolution. https://reach-a-space-podcast-for-kids.simplecast.com/episodes/reaching-out-what-is-a-satellite-UbxrAEyC	
	Guest Presenter on In Plain English podcast	Nov. 2021
	Listen to In Plain English: inplainenglishpod.org .	
	GBH Guest Appearance	Sep. 2021
	Helped explained the celestial origin of the phrase "dog days of summer" in a segment that aired on GBH. Watch the segment here: https://youtu.be/CZerMXwQJxU .	
TUTORING & MENTORSHIP	Carnegie Prep	2017 - Present
	Tutor for high school and college physics and astronomy courses.	
	Ben Connect	2020 - 2021
	Mentoring two undergraduates as part of the University of Pennsylvania alumni mentorship program.	
	Physics Unlimited	Aug. 2020
	Hosted two "facilitator sessions" for international high school students in the Physics Unlimited summer program to discuss physics and learn about academia.	
	Center for Undergraduate Research and Mentorship	2016 - 2018
	Undergraduate Peer Research Mentor.	
	Dept. of Physics & Astronomy, University of Pennsylvania	2015 - 2018
	Tutor for introductory physics and astronomy courses.	

PROFESSIONAL American Astronomical Society
MEMBERSHIP Division for Planetary Sciences of the AAS
American Geophysical Union
National Association of Science Writers
Sigma Xi Scientific Research Honor Society
Sonification World Chat