Phillip H. Phipps, PhD

Curriculum Vitae

University of Maryland, Baltimore County
Planetary Magnetospheres Lab
NASA's Goddard Space Flight Center

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Education

Ph.D. Astronomy, Department of Astronomy, Boston University 2019
M.A. Astronomy, Department of Astronomy, Boston University 2015
B.S. Physics with Honors, North Carolina State University 2013
B.S. Applied Mathematics with Honors, North Carolina State University

Research Experience

Postdoctoral Research Associate May 11, 2020 – present
Advisor: Dr. Timothy Stubbs
NASA's Goddard Space Flight Center, Greenbelt, MD
Radiation environment of the Lunar surface and the effect of topography.

Postdoctoral Research Associate May 2019 – May 10, 2020
Advisor: Prof. Paul Withers
Center for Space Physics, Boston University, Boston, MA
Juno radio occultations of the Io plasma torus around Jupiter.

Graduate Researcher Summer 2015 – April 2019
Advisor: Prof. Paul Withers
Department of Astronomy, Boston University, Boston, MA
Research on the Io Plasma Torus around Jupiter.

JPL Summer 2017 Internship Summer 2017
Advisor: Dr. Kamal Oudrhiri and Dustin Buccino
Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA
Worked with Juno radio science instrument team to analyze Juno radio occultations.

Graduate Researcher Summer 2014 – May 2015
Advisor: Prof. John T. Clarke
Department of Astronomy, Boston University, Boston, MA
Image analysis of Jupiter and Saturn aurora.

Undergraduate Researcher Fall 2010 – Spring 2013
Advisor: Prof. John M. Blondin
Department of Physics, NC State University, Raleigh, NC
Simulations of white dwarf accretion disks using parallelized Astrophysics hydrodynamic FORTRAN

Teaching Experience

1. Lecturer, AS 102 – The Astronomical Universe July 1- Aug 9 2019
   Department of Astronomy, Boston University, Boston, MA
   Taught introductory Astronomy to summer students during Boston University's Summer Session II.

For the following Teaching Fellow positions, I led discussion sessions and labs, graded homework and exams, and led night labs during the evenings.

2. Teaching Fellow, AS202 – Principles of Astronomy I Fall 2015

Department of Astronomy, Boston University, Boston, MA

3. Teaching Fellow, AS203 – Principles of Astronomy II — Spring 2015
   Department of Astronomy, Boston University, Boston, MA
4. Teaching Fellow, AS202 – Principles of Astronomy I — Fall 2014
   Department of Astronomy, Boston University, Boston, MA
5. Teaching Fellow, AS109 – Cosmology — Spring 2014
   Department of Astronomy, Boston University, Boston, MA
6. Teaching Fellow, AS 105 – Alien Worlds — Fall 2013
   Department of Astronomy, Boston University, Boston, MA
7. Physics Tutor — Spring 2012 – Spring 2013
   Department of Physics, NC State University, Raleigh, NC
   Tutored undergraduate physics for Engineers and non-majors

Outreach

1. Boston University Open Nights — Spring 2015 – May 2020
   Helped run BU public open nights at Judson B. Coit Observatory
2. Science for kids — June 15, 2018
   Helped run a science event run by the Center for Space Physics, Boston University
3. Science by the pint — January 2016
   Event put on by Harvard Universities Science in the news to discuss science with the general public over a pint.
   http://sitn.hms.harvard.edu/science-by-the-pint/
4. Open night for Metropolitan College group — December 2015
   Managed an open night for the Boston University honor society of metropolitan college.
5. Lunar eclipse viewing — September 2015
   Managed a BU public event for the viewing of the Lunar eclipse at Boston University's Coit Observatory.

Observational Experience

Lowell Observatory, Happy Jack, Arizona, Discovery Channel Telescope, 4.3m Telescope
Judson B. Coit Observatory, Boston University, Boston, MA, 14", 10", 8" reflectors and 6" refractor

Computer Experience

Languages: Python, MatLab, IDL, some Fortran
Research tools: NAIF/SPICE, DS9, MaximDL
Document Preparation: LaTeX, Windows Office
Operating Systems: Linux (Ubuntu), Windows, Mac

Professional Society Memberships

American Geophysical Union, Member — 2016 – present
American Astronomical Society, Member — 2010 - present
Sigma Pi Sigma honor society member — 2013 - present
Society of Physics Students — 2009-2016

Awards/Grants

Co-Investigator on NASA NFDAP award (PI: Marissa Vogt, $316K) November 2019
Co-Investigator on NASA NFDAP award (PI: Paul Withers, $289K) March 2019
AAS International Travel Grant ($2535.53) March 2019
For travel to MOP 2019 in Sendai, Japan
Magnetospheres of Outer Planets (MOP) Travel Grant ($1500) April 2017
For Travel to MOP 2017 meeting in Uppsala, Sweden
JPL Summer 2017 Internship, June 26th - Sept 2nd ($8000) March 2017
Astronomy Department Teaching Award ($250) April 2016
Massachusetts Space Grant Consortium Grant ($1800) January 2016
AAS International Travel Grant ($983) April 2015
For travel to IAU meeting in Honolulu, Hawaii, August 2015

Publications

1. **Phipps, Phillip H.**, Withers, Paul, Buccino, Dustin R., Yang, Yu-Ming, and Parisi, Marzia (in prep), Two years of observations of the Io plasma torus by Juno radio occultations: Results from Perijoves 1 to 15
2. **Phipps, Phillip H.**, Withers, Paul, Vogt, Marissa, Buccino, Dustin R., Yang, Yu-Ming, Parisi, Marzia, Ranquist, Drake, Kollmann, Peter, and Bolton, Scott (2020), Where is the Io plasma torus? A comparison of observations by Juno radio occultations to predictions from Jovian Magnetic field models, J. Geophys. Res. Space Physics, DOI: 10.1029/2019JA027633
3. **Phipps, Phillip H.**, Withers, Paul, Buccino, Dustin R., Yang, Yu-Ming, and Parisi, Marzia (2019), Variations in the density distribution of the Io plasma torus as seen by radio occultations on Juno Perijoves 3, 6, and 8, J. Geophys. Res. Space Physics, 124, DOI: 10.1029/2018JA026297
4. **Phipps, Phillip H.**, Withers, Paul, Buccino, Dustin R., and Yang, Yu-Ming (2018), Distribution of plasma in the Io plasma torus during *Juno* Perijove 1, J. Geophys. Res. Space Physics, 123, DOI:10.1029/2017JA025113
5. **Phipps, Phillip H.** and Withers, Paul (2017), Radio occultations of the Io plasma torus by *Juno* are feasible, J. Geophys. Res. Space Physics, 122, DOI: 10.1002/2016JA023447

Seminars

1. Juno Observations of the Io plasma torus, April 17, 2019
GSFC Solar System Exploration Spring Seminar Series
2. Juno Observations of the Io plasma torus, JPL seminar October 15, 2018

Abstracts

My name is written in bold font (e.g., **Phipps, P. H.**).

1. **Phipps, P.H.,** Withers, P., Buccino, D. R., Yang, Y-M., Parisi, M., Hinton, P. C., & Bagenal, F. (2019), Io Plasma Torus Variability During the Juno Mission, 2019 AGU Fall meeting abstracts, San Francisco, CA, Dec. 9 - 13
2. Yang, Y-M, Buccino, D., Parisi, M., Folkner, W. M., **Phipps, P. H.**, Kahan, D. S., Withers, P., & Oudrhiri, K., (2019) Juno Radio Science Observations and Gravity Science Calibrations of Io plasma torus: IPT impacts to Europa Gravity Science, 2019 AGU Fall meeting abstracts, San Francisco, CA, Dec. 9 - 13

3. **Phipps, P.H.,** Withers, P., Buccino, D. R., Yang, Y-M., Parisi, M., Hinton, P. C., & Bagenal, F. (2019), Juno Radio Occultations of the Io Plasma Torus, NEROC Symposium, MIT Haystack Observatory, Westford, MA, Nov 1
4. Molrano, A., Zannoni, M., Gomez Casajus, L., Tortora, P., Withers, P., **Phipps, P. H.**, Buccino, D., & Oudrhiri, K. Morphology of the Io Plasma Torus inferred from Dual Uplink-Dual Downlink calibration during Juno Mission, EPSC-DPS Joint Meeting 2019, Geneva, Switzerland, 15-20 Sept.
5. **Phipps, P.H.,** Withers, P., Hinton, P. C., Bagenal, F., Buccino, D. R., Yang, Y-M., & Parisi, M. (2019), The Centrifugal Equator as Seen by Juno Radio Occultations of the Io Plasma Torus, Magnetospheres of the Outer Planets meeting, Sendai, Japan, 3-7 June.
6. Zannoni, M., Gomez Casajus, L., Molrano, A., Tortora, P., **Phipps, P. H.**, Withers, P., Buccino, D., Oudrhiri, K., Durante, D., & Iess, L., (2019), Observations of the Io Plasma Torus with Juno radio science experiment, 21st EGU General Assembly, Vienna, Austria, 7-12 Apr.
7. **Phipps, P.H.,** Withers, P., Buccino, D. R., Yang, Y-M., Hinton, P. C., & Bagenal, F. (2018), Variability in the Io Plasma Torus as Seen by Juno Radio Occultations, Abstract 438966 presented at 2018 Fall Meeting, AGU, Washington, DC, 10-14 Dec.
8. Yang, Y-M, Buccino, D., Parisi, M., Folkner, W. M., **Phipps, P. H.**, Withers, P., Kahan, D. S., & Oudrhiri, K., (2018) Juno Radio Science Observations and Gravity Science Calibrations of Io Plasma Torus and its Impact on Telecommunications Links for Future Missions, 2018 AGU Fall meeting abstracts, Washington, DC, 10-14 Dec.
9. **Phipps, P.H.,** Withers, P., Buccino, D. R., Yang, Y-M., Hinton, P. C., & Bagenal, F. (2018), Io plasma torus geometry from *Juno* radio occultations, Magnetospheres of Outer Planets meeting, Boulder, CO, 9-13 Jul
10. **Phipps, P. H.**, Withers, P., Buccino, D. R., Yang, Y-M., & Hinton, P. C. (2017). Juno Perijove 1 radio occultation of the Io plasma torus, Abstract 279802 presented at 2017 Fall Meeting, AGU, New Orleans, LA, 11-15 Dec.
11. Yang, Y-M, Buccino, D., Folkner, W. M., Oudrhiri, K., **Phipps, P. H.**, Parisi, M., & Kahan, D. S. (2017), Juno Radio Science Observations and Gravity Science Calibrations of Plasma Electron Content in Io Plasma Torus, 2017 AGU Fall Meeting Abstracts, New Orleans, LA, 11-15 Dec.
12. **Phipps, P.H.** & Withers, P. (2017), Radio occultations of the Io plasma torus with the *Juno* Spacecraft: A study of feasibility, Magnetospheres of Outer Planets meeting, Uppsala, Sweden, 12-16 June
13. **Phipps, P.H.** & Withers, P. (2016). Feasibility of Juno radio occultations of the Io plasma torus, Abstract 178300 presented at 2016 Fall Meeting, AGU, San Francisco, Calif., 12-16 Dec.
14. **Phipps, P.H.** & Clarke, J.T. (2015). Calculation of the Auroral Color Ratio of the Gas Giants Using Images, IAU General Assembly, Meeting #29, #2258018

Spacecraft Mission Involvement

- Juno Science Team (as NFDAP Co-I)
- Juno Magnetospheric Working Group participant (as NFDAP Co-I)
- Juno Gravity Science team (JPL summer intern with Radio Science team)

Professional Service

1. Review responsibilities for articles submitted to scientific journals.
   - Journal of Geophysical Research: Space Physics 2019