

CENTER FOR SPACE PHYSICS NEWSLETTER

BOSTON
UNIVERSITY

DECEMBER 2018/ JANUARY 2019



In this issue:

- CSP represented by many at AGU Fall Meeting in December in Washington, D.C.
- Astronomy Faculty member awarded prestigious CAREER grant
- New intern working with Nishimura group

New Awards

Wen Li

Received an **NSF CAREER** award entitled "CAREER: Exploring Mysterious Whistler Mode Waves in Earth's Plasmaspheric Plumes"

Carl Schmidt

Received **NASA** Guest Observer awards on the **Keck** and **WIYN** telescopes

Conference Presentations

AGU100 Partial list of research presented at 2018 AGU Fall meeting, Washington D.C., December 2018

Bering III, E. A., Chen, J., Jackson, D. R., Pinsky, L. S., Andersson, L., Cutler, J., Sheehan, J. P., Moldwin, M., Hara, K., Lemmon, M. T., Heelis, R. A., Stoneback, R., Forbes, J., Thorsen, D. and **P. Withers**, "A CubeSat Approach to Martian Ionospheric Tomography"

Broll, J., Fuselier, S. A., **Walsh, B.**, Petrinc, S. M., Trattner, K. J., Burch, J. L., Anderson, B. J., Gomez, R. G. G., and B. L. Giles, "Structure and evolution of dayside magnetopause reconnection exhaust"

Broll, J., Kuntz, K., **Walsh, B.**, **Atz, E.**, Billingsley, L., Collier, M., Connor, H., Dingwall, B., Kujawski, J., Porter, S., Sibeck, D., Snowden, S., Thomas, N., Turner, D., Weatherwax, A., Yousuff, A., **Zosuls, A.**, and **T. Cragwell**, "The CuPID Cubesat Observatory: Imaging Soft X-rays from the Magnetosheath"

Capannolo, L., **Li, W.**, **Ma, Q.**, **Shen, X.-C.**, and X.-J. Zhang, "Multi-case study of energetic electron precipitation during Van Allen Probes and POES magnetic conjunctions"



Graduate Student Kerry Hensley (PI: Paul Withers) leading a press conference at AAS. Hensley has been the AAS Media Fellow since 2018 and was recently reappointed for 2019.

Crismani, M. M. J., Deighan, J., McCord Schneider, N., Plane, J. M. C., **Withers, P.**, Halekas, J. S. H., Chaffin, M., and S. K. Jain, "Localized Ionization Hypothesis for Transient Ionospheric Layers"

Felici, M., **Withers, P.**, **Mendillo, M.**, **Moore, L.**, **Narvaez, C.**, and B. M. Jakosky, "Latest results from the MAVEN Radio Occultation Science Experiment (ROSE) Marianna Felici"

Gan, L., **Li, W.**, **Ma, Q.**, Albert, J. M., and X. Tao, "Quantifying nonlinear interactions between chorus waves and radiation belt electrons"

Li, W., **Shi, R.**, **Ma, Q.**, **Shen, X.-C.**, and **L. Capannolo**, "Typical properties of whistler mode waves in plasmaspheric plumes and their quantitative effects on energetic electron precipitation"

Ma, Q., Yue, C., **Li, W.**, Thorne, R. M., and J. Bortnik, "Ion heating by electromagnetic ion cyclotron waves in the inner magnetosphere"

Mayyasi, M., Benna, M., and P. Mahaffy, "Neutral-Driven Plasma Structure in the Upper Atmosphere of Mars"

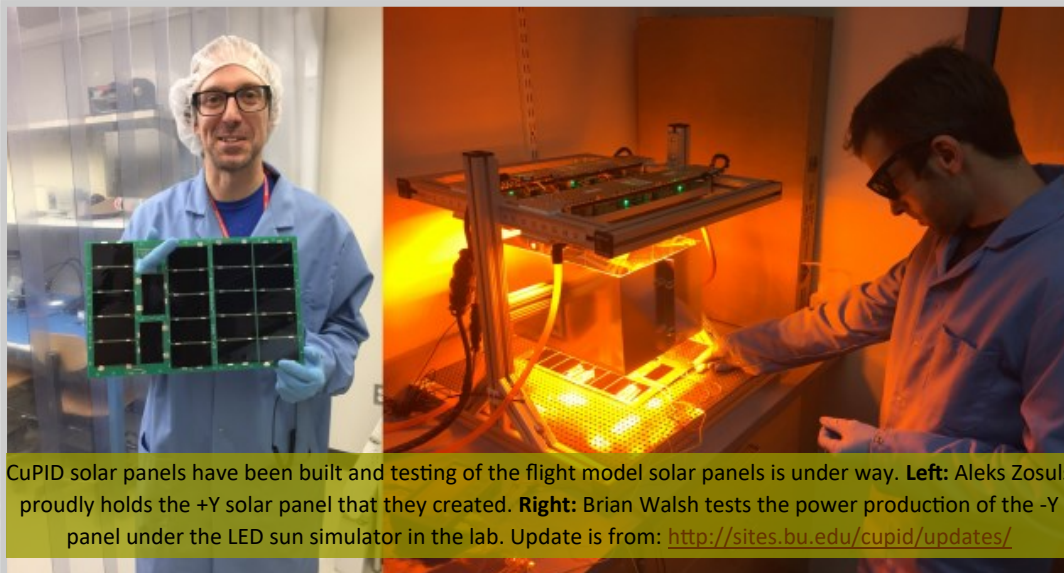
Phipps, P. H., **Withers, P.**, Buccino, D., Yang, Y.-M., Hinton, P. C., and F. Bagenal, "Variability in the Io Plasma Torus Seen by Juno Radio Occultations"

Shen, X.-C., **Li, W.**, **Ma, Q.**, **Shi, R.**, and S. Huang, "Spatial scales and properties of chorus waves using simultaneous multi-satellite observations"

Walsh, B. M., **Bhakyapaibul, T.**, and **Y. Zou**, "Identifying uncertainties in L1 measurements as predictors of conditions at the magnetopause"

Yang, Y.-M., Buccino, D., Parisi, M., Folkner, W. M., **Phipps, P. H.**, **Withers, P.**, Kahan, D. S., and K. Oudhiri, "Juno Radio Science Observations and Gravity Science Calibrations of Io Plasma Torus and Its Impact on Telecommunications Links for Future Missions"

(CONTINUED)



CuPID solar panels have been built and testing of the flight model solar panels is under way. **Left:** Aleks Zosuls proudly holds the +Y solar panel that they created. **Right:** Brian Walsh tests the power production of the -Y panel under the LED sun simulator in the lab. Update is from: <http://sites.bu.edu/cupid/updates/>

Oza, A. V., Leblanc, F., Johnson, R. E., Schmidt, C., Leclercq, L., Cassidy, T. A., and J.-Y. Chaufray, (2019). "Dusk Over Dawn O₂ Asymmetry in Europa's Near-Surface Atmosphere", *Planetary and Space Science*. <https://doi.org/10.1016/j.pss.2019.01.006>

New alumnus

Matt Young successfully defended his dissertation entitled "Meter-Scale Waves in the E-Region Ionosphere: Their Interaction with Large-Scale Structures and Their Variation with Altitude". Congratulations!

BU Astronomy UROP Symposium (December 2018)

Green, A., W. Li, Q. Ma, and R. Shi (December 2018), "Statistical survey of lightning generated whistlers"

Accepted Publications

Dalba, P. A., & Withers, P., (2019). "Cassini radio occultation observations of Titan's ionosphere: The complete set of electron density profiles", *Journal of Geophysical Research: Space Physics*, 124. <https://doi.org/10.1029/2018JA025693>

Moore, L., M. Galand, A. Kliore, A. Nagy, J. O'Donoghue, (2018). "Saturn's Ionosphere" In: *Saturn in the 21st Century*, K.H. Baines, F.M. Flasar, N. Krupp, T.S. Stallard (eds.), Cambridge: Cambridge University Press. <https://doi.org/10.1017/9781316227220>

Morgenthaler, J. P., Rathbun, J. A., **Schmidt, C. A., Baumgardner, J.,** Schneider, N. M., (2019). "Large Volcanic Event on Io Inferred from Jovian Sodium Nebula Brightening", *Astrophysical Journal Letters*, 871, L23. <http://doi.org/10.3847/2041-8213/aafdb7>

O'Donoghue, J., **L. Moore,** J. Connerney, H. Melin, T. Stallard, S. Miller, and K.H. Baines, (2018). "Observations of the chemical and thermal response of 'ring rain' on Saturn's ionosphere", *Icarus*, <https://doi.org/10.1016/j.icarus.2018.10.027> *This one has been popular in the news, with >100 news outlets covering it online so far (<https://www.altmetric.com/details/52775928/news>), led by the NYTimes, with a handful of radio interviews (BBC, NPR), a couple of poems based on it, and even a right-wing conspiracy.

Other Noteworthy Events

Carl Schmidt and **Luke Moore** completed an observing run at AEOS using the new RIPS instrument. Preliminary results from December 2018 run can be viewed at: <http://people.bu.edu/moore/RIPSpics.html>

Brian Walsh and Paul Cassak (WVU) visited with staff from the House Committee on Science, Space, and Technology in Washington DC on December 13 to talk about the current Space Weather legislation working through Congress.

Merav Opher was featured in the Boston Globe for an article about the Voyager Missions.

New faces

Robert Irvin

Robert joined CSP as an undergraduate research intern working with **Toshi Nishimura** this semester. He is from the Physics department at the Purdue University. He will work on high-latitude ionosphere dynamics using radars.