

# Carl A. Schmidt

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Citizenship: United States

## Education

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Ph.D., Astronomy, Boston University 2013  
Thesis: Mercury's Sodium Exosphere (M. Mendillo Advisor)

B.A., Physics, University of Colorado 2005

## Research Experience

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Research Associate, CNRS: LATMOS (F. Leblanc Supervisor) 2015 - Present

- Simulation of Mercury's environment using Monte-Carlo exosphere and hybrid magnetosphere codes
- Analysis of ground and space-based data sets on the environments of Io, Europa and Mercury

Research Associate, Univ. Virginia (R. E. Johnson Supervisor) 2013 - 2015

- Gas distributions in cometary coma: Integral-field spectroscopy, narrow-band imaging, numeric and analytic modeling
- Io's plasma torus, volcanic activity and neutral clouds: lead campaigns at Apache Point, McDonald and Fan Mountain observatories

Graduate Research Assistant, Boston Univ. (M. Mendillo Supervisor) 2006 - 2013

- Observation, analysis and simulation of Mercury's atmospheric escape
- Assisted in design and testing of the imaging spectrograph at Poker Flat Observatory and two standard spectrographs for mobile calibration

Undergraduate Research Assistant, Univ. Colorado (F. Hearty Supervisor) 2002 - 2005

- Assisted in design, construction, and testing of the Near-Infrared Camera and Fabry-Perot Spectrometer for the 3.5m at Apache Point Observatory

## Teaching Experience

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Graduate Teaching Assistant, Boston Univ.	2007
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- Lab instructor for *The Solar System* undergraduate course

## Peer Reviewed Publications

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- J. D. Turner, D. Christie, P. Arras, R. E. Johnson, C. Schmidt (2016) Investigation of the environment around close-in transiting exoplanets using CLOUDY. *Monthly Notices for the Royal Astronomical Society*, Vol 458 (4), p.3880-3891.
  - C. Schmidt (2016) High Resolution Integral-Field Spectroscopy of Gas and Ion Distributions in the Coma of Comet C/2012 S1 ISON. *Icarus*, Vol 265, p. 35-41.
  - R.E. Johnson, A. Oza, L.A. Young, A.N. Volkov and C. Schmidt (2015) Volatile Loss and Classification of Kuiper Belt Objects. *Astrophysical Journal*, Vol 809 (1), article id. 43.
  - N.-E. Raouafi, C. M. Lisse, G. Stenborg, G. H. Jones, and C. Schmidt (2015) Dynamics of HVECs emitted from comet C/2011 L4 as observed by STEREO. *Journal of Geophysical Research*, Vol 120 (7), pp. 5329-5340.
  - C. Schmidt, R.E. Johnson, J. Baumgardner, M. Mendillo (2015) Observations of Sodium in the Coma of Comet C/2012 S1 (ISON) During Outburst. *Icarus*, Vol 247, p. 313-318.
  - C. Schmidt (2013) Monte-Carlo Modeling of North-South Asymmetries in Mercury's Sodium Exosphere, *Journal of Geophysical Research*, Vol 118, A50396.
  - C. Schmidt, J. Baumgardner, M. Mendillo., J. Wilson (2012) Escape rates and variability constraints for high-energy sodium sources at Mercury, *Journal of Geophysical Research*, Vol 117, A03301.
  - C. Schmidt, J. Wilson, J. Baumgardner, M. Mendillo (2010) Orbital Effects on Mercury's Escaping Sodium Exosphere, *Icarus*, Vol 207 (1), p. 9-16.
  - F. Hearty and 11 co-authors including C. Schmidt (2005) Colorado's Near-Infrared Camera (AKA NIC-FPS) Commissioning on the ARC 3.5M Telescope, *Proc. SPIE*, Vol 5904, p. 199-211.

## Conference and Meeting Presentations

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- Schmidt, Leblanc, Johnson, Mendillo, Baumgardner (2015) Evidence for a Plasma Interaction with Europa's Sodium Clouds from High Resolution Integral Field Spectroscopy. AGU Meeting Abstract.

- Raouafi, Lisse, Stenborg, Jones, and Schmidt (2015) Dynamics of High-Velocity Evanescent Clumps (HVECs) Emitted from Comet C/2011 L4 (Pan-STARRS) as Observed by STEREO. AGU Meeting Abstract.
- Schmidt, Johnson, Mendillo, Baumgardner, Leblanc (2015) Neutral and Plasma Distributions in the Coma of Comet C/2012 S1 ISON: Narrowband Imaging and Integral-Field Spectroscopy. EPSC Meeting Abstract.
- Schneider and 11 co-authors including Schmidt (2015) Plasma Parameters in Io's Torus: Measurements from Apache Point Observatory. EPSC Meeting Abstract.
- Schmidt, Schneider, Turner, Johnson, Chaffin, Rugenski, McNeil (2015) Optical Spectroscopy of the Io Plasma Torus in Support of Hisaki/EXCEED. MOP Meeting Abstract.
- Schmidt, Johnson, Mendillo, Baumgardner (2014) Velocity-Resolved Multi-Scale Imaging of Na Escape from Io. AGU Meeting Abstract.
- Turner and 11 co-authors including Schmidt (2014) Plasma Parameters in Io's Torus: Measurements from Apache Point Observatory. AGU Meeting Abstract.
- Schmidt, Johnson, Baumgardner, Mendillo (2014) Gas Distributions in Comet ISON's Coma: Concurrent Integral-Field Spectroscopy and Narrow-band Imaging, DPS Meeting Abstract DPS2014-113.02.
- Johnson, Oza, Young, Volkov, Schmidt (2014) Volatile Loss and Classification of Kuiper Belt Objects, DPS Meeting Abstract DPS2014-510.01.
- Schmidt, Mendillo, Baumgardner, Johnson (2013) Sodium Escape in Mercury's Atmosphere: Ground-Based Observations in Support of MESSENGER, DPS Meeting Abstract DPS2013-102.07.
- Schmidt, Baumgardner, Mendillo (2012) Hemispheric Asymmetries in Mercury's Exosphere, DPS Meeting Abstract DPS2012-410.05.
- Clarke and 9 co-authors including Schmidt (2012) HST observations and modeling of the Martian hydrogen corona, DPS Meeting Abstract DPS2012-214.01.
- Schmidt, Baumgardner, Mendillo, Sundberg, Walsh (2012) Hemispheric Asymmetries in Mercury's Exosphere Due to the Offset Magnetic Dipole, AGU Meeting Abstract P33B-1931
- Schmidt, Baumgardner, Mendillo, Wilson (2011), Escape rates and variability constraints for high-energy sodium sources at Mercury, Joint EPSC/DPS Meeting Abstract EPSC-DPS2011-100.
- Mangano and 19 co-authors including Schmidt (2010) The sodium emission from Mercury's exosphere as detected by the IMW coordinated campaign in June 2006, COSPAR Paper B07-0022-10.
- Schmidt, Baumgardner, Mendillo, Davis, Musgrave (2010) Observations of Extended Emissions at Mercury by the STEREO Spacecraft, EPSC proceedings p419.
- Schmidt, Baumgardner, Mendillo, Davis, Musgrave (2010) Observations of tail structures at Mercury with the STEREO spacecraft, Joint MESSENGER / BepiColombo Workshop Abstract 2.2.1.

- Schmidt, Wilson, Baumgardner, Mendillo (2009) Variability in Mercury's Escaping Sodium Atmosphere, DPS Meeting Abstract DPS2009-35.01
- Schmidt, Wilson, Baumgardner, Mendillo (2008) Wide Field Observations of Variability in Mercury's Comet-like Sodium Tail, DPS Meeting Abstract DPS2008-51.09
- Schmidt, Wilson, Baumgardner, Mendillo (2008) Wide Field Observations of Mercury's Extended Sodium Exosphere, COSPAR paper B07-0036-08
- Schmidt, Baumgardner (2007) Boston University Calibration Facility for Optical Aeronomy. CEDAR Meeting Abstract

### Invited Presentations

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Modern Planetary Applications for Small Telescopes, UMD, College Park, MD	2015
Characteristics of Sodium Escape at Mercury, SERENA-HEWG, Killarney, IRL	2014
Atmospheric Escape in Our Solar System, Space Challenges, Sofia, BG	2013
Mercury's Sodium Atmosphere, AOSS, Univ. of Michigan, Ann Arbor, MI	2012
Mercury's Tenuous Atmosphere, Heliophysics, NASA GSFC, Greenbelt, MD	2012

### Grants Awarded as PI

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NASA Earth and Space Sciences Fellowship (NESSF)	2010 - 2013
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### Telescope Time Awarded as PI

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National Solar Observatory - 1 week with the Dunn Solar Telescope	2016
SOLARNET - 3 days with the Vacuum Tube Telescope	2016

### Professional Service

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Referee: Icarus (x4), Astronomy & Astrophysics  
 Panel Reviewer: NASA's PMDAP, CDAP, OPR, GI, PDS and SSW programs  
 Convener: Dynamics of the Io-Jupiter System I, Fall AGU 2014

### Public Outreach

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Interviewed for NASA's ScienceCast video series	2016
Lecturer, Fan Mountain Observatory Public Night	2014 - 2015
Guest, Science Straight Up, WTJU FM	2014
Science Fair Judge, Virginia Piedmont Regional Science Fair	2014
Workshop Coordinator, Sprout, <a href="http://www.thesprouts.org">www.thesprouts.org</a>	2010 - 2013
Lab Instructor, Upward Bound program, Boston University	2010
Science Fair Judge, O'Bryant Middle School for Math and Sci., Boston, MA	2009