

Carl A. Schmidt

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Education

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

B.A., Physics, University of Colorado 2005

Research Experience

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

- Numerical modelling of Mercury's environment: MPI exosphere and hybrid magnetosphere codes

Research Associate, Univ. Virginia (R. E. Johnson Supervisor) 2013 - 15

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

Graduate Research Assistant, Boston Univ. 2006 - 2013

- Observation, analysis and 3D time-dependent modeling of Mercury's atmospheric escape. Pipeline construction for coronagraph and integral-field echelle spectrograph.
- Assisted in design and testing of the imaging spectrograph at Poker Flat Observatory and two standard spectrographs for mobile calibration.

Graduate Teaching Assistant, Boston Univ. 2007

- Lab instructor for AS101 undergraduate introductory astronomy.

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

Peer Reviewed Publications

- C. Schmidt (2015) High Resolution Integral-Field Spectroscopy of Gas and Ion Distributions in the Coma of Comet C/2012 S1 ISON. *Icarus*, *In Review*.
- J. D. Turner, D. Christie, P. Arras, R. E. Johnson, C. Schmidt (2015) Investigation of the environment around close-in transiting exoplanets using CLOUDY. *Monthly Notices to the Royal Astronomical Society*, *In Review*.
- 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*, Volume 809, Issue 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*, Volume 120, Issue 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, Issue 1, p. 9-16.
- F. Hearty and 11 co-authors including C. Schmidt (2005) Colorados Near-Infrared Camera (AKA NIC-FPS) Commissioning on the ARC 3.5M Telescope, *Proc. SPIE*, Vol 5904, p. 199-211.

Grants Awarded

NASA Earth and Space Sciences Fellowship (NESSF)

2010 - 2013

Conference and Meeting Presentations

- Schmidt, Leblanc, Johnson, Mendillo, Baumgardner (2015) Evidence for a Plasma Interaction with Europas 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.
- 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 |

Professional Service

Referee: Icarus (x3), Astronomy & Astrophysics
 Reviewer: NASA PMDAP, CDAP, OPR and SSW panels
 Convener: Dynamics of the Io-Jupiter System I, Fall AGU 2014

Public Outreach

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| Guest 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, www.thesprouts.org | 2010 - 2013 |
| Lab Instructor, Upward Bound program, Boston University | 2010 |
| Science Fair Judge, O'Bryant Middle School for Math and Sci., Boston, MA | 2009 |