Edward W. Schwieterman

CURRICULUM VITAE

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University of Washington
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Citizenship: U.S. Citizen

Education:

UNIVERSITY OF WASHINGTON (UW)
PhD Candidate, Astronomy & Astrobiology, expected 2016
Thesis Advisor: Victoria Meadows
Master of Science, Astronomy, August 2011

FLORIDA INSTITUE OF TECHNOLOGY (FIT)
B.Sc., Astronomy & Astrophysics, *Magna Cum Laude,* May 2010
B.Sc., Physics, *Magna Cum Laude,* May 2010

Current Position:

UW Graduate Research Assistant
Virtual Planetary Laboratory
Supervisor: Victoria Meadows
Spectral models of terrestrial planets. Radiative transfer, photochemical, and climate modeling of planetary atmospheres. Studies of Earth as an exoplanet.

Past Positions:

Research Assistant, Lowell Observatory, summer 2010
Research Assistant, Florida Tech, 2009-2010
NAU REU Intern, Lowell Observatory, summer 2009
SARA REU Intern, Florida Tech, summer 2008

Journal Publications:

Harman, C.E., **Schwieterman, E.W**., Schottelkotte, J.C., Kasting, J.F. 2015. Abiotic O_2 Levels on Planets around F, G, K, and M Stars: Possible False Positives for Life? *The Astrophysical Journal*, 812:137 [ADS] [ApJ]

Schwieterman, E.W., Robinson, T.D., Meadows, V.S., Misra, A., Domagal-Goldman, S.D. 2015. Detecting and Constraining N_2 Abundances in Planetary Atmospheres Using Collisional Pairs**.** *The Astrophysical Journal*, 810:57. [ADS] [ApJ] [PDF]

Schwieterman, E.W., Cockell, C.S., Meadows, V.S. 2015. Nonphotosynthetic Pigments as Potential Biosignatures. *Astrobiology*, 15(5): 341-361. [ADS] [Astrobiology] [PDF]

Amador, E.S., Cable, M.C, Chaundry, N., Cullen, T., Gentry, D., Jacobsen, M.B., Murukesan, G., **Schwieterman, E.W.**, Stevens, A.H., Stockton, A., Yin, C., Cullen, D.C., Geppert, W. 2015. Synchronous in-field application of life-detection techniques in planetary analog missions. *Planetary and Space Sciences*, 106: 1-10. [ADS] [Science Direct]

Robinson, T.D.; Ennico, K.; Meadows, V.S.; Sparks, W.; Bussey; D.B.J.; **Schwieterman; E.W**.; Breiner, J. 2014. Detection of Ocean Glint and Ozone Absorption Using LCROSS Earth Observations. *The Astrophysical Journal*, 787:1. [ADS] [ApJ] [PDF]

Knight, M.M., Schleicher, D.G., Farnham, T.L., **Schwieterman, E.W.**, Christensen, S.R. 2012. A Quarter-Century of Observations of Comet 10P/Tempel 2 at Lowell Observatory: Continued Spin-Down, Coma Morphology, Production Rates, and Numerical Modeling. *The Astronomical Journal,* 144:153. [ADS]

Meech, K.J., and 191 colleagues (including **Schwieterman, E.W.**) 2011. EPOXI: Observations from a Worldwide Earth-Based Campaign. *The Astrophysical Journal Letters*, 734:L1. [ADS]

Knight, M.M., Farnham, T.L., Schleicher, D.G., **Schwieterman, E.W.** 2011. The Increasing Rotation Period of Comet 10P/Tempel 2. *The Astronomical Journal*, 141:2. [ADS]

Schwieterman, E. W., Wood, M.A., Piwowar, D., Patterson, J., Rea, R., Monard, B., Krajci, T., Bolt, G., Roberts, G., Foote, J., McCormick, J. 2010. Time-Series Photometry of GW Librae One Year after Outburst. *Journal of the Southeastern Association for Research in Astronomy,* Vol 3. [ADS]

Addison, B. C., Durrance, S.T., Vennes, S., **Schwieterman, E.W.**, Nickerson, D. 2010. Modeling and Observing Extrasolar Planetary Transits. *Journal of the Southeastern Association for Research in Astronomy,* Vol 3. [ADS]

Piwowar, D., Wood, M.A., **Schwieterman, E.W.,** Patterson, J., Monard, B., Rea, R., Starkey, D., Roberts, G. 2010. Time-Series Photometry of the Cataclysmic Variable Systems VY Aquarii and V2491 Cygni. *Journal of the Southeastern Association for Research in Astronomy,* Vol 3. [ADS]

IAU Circulars

Knight, M., **Schwieterman, E.,** Schleicher, D. 2010. Comet 103P/Hartley. IAU Circ. 9163. [ADS]

Abstracts and Conference Proceedings:

Schwieterman, E. Meadows, V., Domagal-Goldman, S., Arney, G., Luger, R., Barnes, R. 2015. Spectral identification of abiotic O_2 buildup from early runaways and rarefied atmospheres. AAS Division of Planetary Sciences Meeting #47, #404.04. Talk. [Abstract]

Schwieterman, E. Binder, B., Tremmel, M., Garofali, K., Agol, E., Meadows, V. 2015. Promoting Diversity in STEM through Active Recruiting and Mentoring: The Pre-Major in Astronomy Program (Pre-MAP) at the University of Washington. AAS Division of Planetary Sciences Meeting #47, #202.08. Talk. [Abstract]

Arney, G., Domgal-Goldman, S.D., Meadows, V.S., Wolf, E., **Schwieterman, E.W.,** Charnay, B., Claire, M., Hebrard, E. 2015. Under an Orange Sky: The Many Implications of Organic Haze for Earthlike Planets. AAS Division of Planetary Sciences Meeting #47, #404.02. Talk. [Abstract]

Schwieterman, E.W. 2015. Bridging the Skill Gap from High School to Student Researcher: The Pre-Major in Astronomy Program (Pre-MAP) at the University of Washington. Northwest Astronomy Teaching Exchange (NATE), Center for Astronomy Education (CAE). doi: 10.13140/RG.2.1.2008.9044. Talk. [PDF]

Schwieterman, E.W., Meadows, V.S., Robinson, T.D., Misra, A., Domagal-Goldman, S.D., Luger, R., Barnes, R., Crisp, D. 2015. Using Dimers to Constrain Planetary Habitability and Discriminate Against False Positives for Life. Astrobiology Science Conference 2015 #7486. Talk. [Abstract]

Domagal-Goldman, S.D., and 17 colleagues (including **Schwieterman, E.W.**) 2015. A Week in the Life: An Astrobiology-Focused Study for a LUVOIR (Large UV-Optical-IR) Telescope. Astrobiology Science Conference 2015 #7703. Talk. [Abstract]

Schwieterman, E., Domagal-Goldman, S., Meadows, V., Lugar, R., Barnes, R., Wordsworth, R. 2015. Distinguishing True and False Positive Oxygen Signatures with Models and Observations. American Astronomical Society Meeting #225, #224.02. Talk. [ADS]

Domagal-Goldman, S., Meadows, V., **Schwieterman, E**., Luger, R., Wordsworth, R., Barnes, R., Segura, A., Claire, M. Mechanisms for Generating False Positives for Extrasolar Life. American Astronomical Society Meeting #225, #407.07. Talk. [ADS]

Meadows, V., Robinson, Ty. Misra, A., Ennico, K. Sparks, W.B., Claire, M., Crisp, D., **Schwieterman, E.**, Bussey, D., Breiner, J. 2015. Earth as an Exoplanet: Lessons in Recognizing Planetary Habitability. American Astronomical Society Meeting #225, #406.05. Talk. [ADS]

Arney, G., Meadows, V., Domagal-Goldman, S., Claire, M., **Schwieterman, E.** 2015. Hazy Archean Earth as an Analog for Hazy Earthlike Exoplanets. American Astronomical Society Meeting #225, #224.02. Talk. [ADS]

Gentry, D., Amador, E.S., Cable, M.L., Chaudry, N., Cullen, T., Jacobsen, M., Murusekan, G., **Schwieterman, E**., Stevens, A., Stockton, A., Yin, C., Cullen, D., Geppert, W. 2014. Field Comparisons of Three Biomarker Detection Methods in Icelandic Mars Analogue Environments. American Geophysical Union, Fall Meeting 2014, #P21D-3961. Poster. [ADS]

Arney, G., Domagal-Goldman, S., Meadows, V., Claire, M., **Schwieterman, E.** 2014. Pale Orange Dots: Hazy Archean Earth as an Analog for Hazy Earthlike Exoplanets. American Astronomical Society, DPS meeting #46, #210.18. Poster. [ADS]

Schwieterman, E., Cockell, C., Meadows, V.S. 2014. Non-photosynthetic pigments as potential biosignatures. Exoplanets, Biosignatures, and Instruments #2-40. Poster. [ADS]

Cable, M.L., Amador, E.S., **Schwieterman, E.,** Jacobsen, M.B., Yin, C., Stockton, A.M., Gentry, D.M., Stevens, A., Murukesan, G., Chaundry, N., Cullent, T., Geppert, W., Cullen, D. 2014. Icelandic Lava Fields as a Terrestrial Analog for Mars: Investigating Habitability, Productivity, and Microbial Diversity. 45th Lunar and Planetary Science Conference. LPI contribution No. 1777, p.2721. Poster. [ADS]

Schwieterman, E.W., Robinson, T.D., Meadows, V., Crisp, D., Misra, A. 2014. Using N_2-N_2 Collisionally-Induced Absorption to Detect N_2 and Determine Pressure in Planetary Atmospheres. American Astronomical Society Meeting #223, #347.18. Poster. [ADS]

Schwieterman, E.W., et al. 2012. Characterizing Terrestrial Exoplanets: Evaluating Temperature and Albedo Retrieval Methods with Near-IR EPOXI Mars Spectra. Astrobiology Science Conference 2012. #4217. Poster [Abstract]

Knight, M.M., Schleicher, D.G., Farnham, T.L., **Schwieterman, E.W**., Christensen, S.R. 2012. Production Rates, Jet Modeling, and the Continued Spin-Down of 10P/Tempel 2. Asteroids, Comets, and Meteors 2012. LPI Contribution No. 1667, id.6410. Talk. [ADS]

Schleicher, D.G., Knight, M.M., Farnham, T.L., **Schwieterman, E.W**., Christensen, S. R. 2012. A Quarter-Century of Observations of Comet 10P/Tempel 2 at Lowell Observatory. American Astronomical Society, DPS Meeting #44, #514.09. Talk. [ADS]

Schwieterman, E.W., Schleicher, D.G., Knight, M.M., Farnham, D.G. 2010. Analysis of 10P/Tempel 2's Morphological Features and Pole Orientation. Bull. Am. Astr. Soc. 42, 965. Poster. [ADS]

Schwieterman, E.W., Farnham, T.L., Knight, M.M., Schleicher, D.G. 2010. Rotational Period Investigation of Comet 10P/Tempel 2 During the 1999 Apparition and Other Results. Bull. Am. Astr. Soc. 42, 454. Poster. [ADS]

Schleicher, D.G., Farnham, T.L., **Schwieterman, E.W.,** Knight, M.M. 2009. Nucleus and Coma Properties of Comet 10P/Tempel 2 During its 1999 Apparition. American Astronomical Society, DPS Meeting #41, #20.04. Talk. [ADS]

Schwieterman, E., Wood, M.A., Piwowar, D., Patterson, J., Rea, R., Monard, B., Krajci, T., Bolt, G., Roberts, G., Foote, J., McCormick, J. 2009. Time-Series Photometry of GW Librae One Year After Outburst. Bull. Am. Astr. Soc. 41, 469. Poster. [ADS]

Piwowar, D.T., Wood, M.A., **Schwieterman, E.,** Patterson, J., Monard, B., Rea, R., Starkey, D., Roberts, G. 2009. Time Series Photometry of the Cataclysmic Variable Systems VY Aquarii and V2491 Cygni. Bull. Am. Astr. Soc. 41, 469. Poster. [ADS]

Publications for which I've made an acknowledged contribution:

Knight, M., et al. 2015. A Further Investigation of Apparent Periodicities and the Rotational State of Comet 103P/Hartley 2 from Combined Coma Morphology and Light Curve Data Sets. The Astronomical Journal, 150:22. [**Contributed to observations**] [ADS]

Luger, R. & Barnes, R. 2015. Extreme Water Loss and Abiotic O_2 Buildup on Planets Throughout the Habitable Zones of M Dwarfs. Astrobiology, 15:2, 119–143. [**Contributed comments**] [ADS]

Knight, M.M. & Schleicher, D.G. 2013. The highly unusual outgassing of Comet 103P/Hartley 2 from narrowband photometry and imaging of the coma. Icarus, 222:2, 691–706. [**Contributed to observations**] [ADS]

Haqq-Misra, J. et al. 2013. The benefits and harm of transmitting into space. Space Policy, 29:1, 40–48. [**Contributed comments**] [ADS]

Knight, M.M. & Schleicher, D.G. 2011. CN Morphology Studies of Comet 103P/Hartley 2. The Astronomical Journal, 141:183. [**Contributed to observations**] [ADS]

Grants and Awards:

Kenilworth Foundation Grant for the Pre-Major in Astronomy Program 2015 ($16.5 K)

Wildcard Award, NASA Famelab Contest, Chicago/AbSciCon Regional Heat (6/2015)

UW Student Technology Fee (STF) Grant, Planetarium Upgrade (Co-I; 2015) ($47 K)

UW STF Grant, Manastash Ridge Observatory Imaging Camera Upgrade (Co-I; 2015) ($37 K)

American Philosophical Society Lewis and Clark Fund for Field Research, 2013 (PI; $4 K)

UW GPSS grants for graduate student life improvements: 2015 ($700), 2013 ($460), 2011 ($360)

NAI Scholar, International Summer School in Astrobiology, 2013

NAI Scholar, Nordic-NASA Summer School, 2012

Outstanding Senior in Astrophysics (FIT, 2009)

Outstanding Junior in Astrophysics (FIT, 2008)

Outstanding Junior (overall) (FIT, 2008)

Distinguished Student Scholar (FIT, 2008, 2009, 2010)

Teaching Experience:

Facilitator, “Being an RA in the Physical Sciences” workshop, TA/RA Conference (UW, 2015)

Instructor, ASTR 192 “Pre-Major in Astronomy (Pre-MAP) seminar” (UW, 2014)

Teaching Assistant, ASTBIO 115 “Introduction to Astrobiology” (UW, 2013)

Teaching Assistant, ASTR 101 “Introduction to Astronomy” (UW, 2011)

Teaching Assistant, ASTR 150 “The Planets” (UW, 2010, 2011)

Astronomy Tutor, CLUE program (UW, 2011, 2014)

Physics/Astronomy Tutor, Student Athlete Academic Services (UW, 2012-2013)

Academic Service:

Student Technology Fee Committee ($5 million/yr fund) (UW, 2015-2016)

Senator, Graduate and Professional Student Senate (GPSS) (UW, 2010-2015)

GPSS Committees: Executive (2014-2015), Finance & Budget (2012-2014; Chair: 2012-2013), Elections (2014, 2015), STF Oversight (2015), Judiciary (2010-2011)

Academic Grievance Hearing Panel (2015)

Steward, UAW Local 4121 (2013-present)

Workshops/School:

NASA/Famelab Science Communication Workshop, Chicago Field Museum (Spring 2015)

Northwest Astronomy Teaching Exchange (NATE),
Center for Astronomy Education (CAE) (Fall 2013; Fall 2015)

International Summer School in Astrobiology, Santander, Spain (Summer 2013)

Nordic-NASA Summer School "Water, Ice, and the Origin of Life in the Universe",
Reykjavik, Iceland (Summer 2012)

NASA/Space Florida Space Academy (Winter 2008)

Outreach/Community:

UW Planetarium and Mobile Planetarium Show Presenter (UW, 2010-present)

Staff Member & Events Organizer, Pre-Major in Astronomy Program (UW 2010-present)

NASA International Year of Astronomy Student Ambassador, Florida (2009)

Coach, Brevard County Collaborative High School Science Bowl Team (2006-2008)

Talks (other than conference talks), Guest Lectures, and Outreach Events (not complete):

"Life signs and Biosignatures: How we'll find life outside the solar system", Astronomy on Tap science outreach talk (Seattle, 2015)

"Spectrally Identifying Habitable Worlds and Biosignatures", Blue Marble Space Institute of Science (Seattle, 2015)

"An Astrobiologist in the Land of Eternal Sunsets", NASA Famelab competition (Chicago, 2015)

"Paper, Glass, and the Greenhouse Effect", NASA Famelab competition (Chicago, 2015)

UW Astrobiology Science Magazine Series "Detecting Oxygen False Positives" (2015)

Society of Physics Students Internship Seminar, Panel Member (UW, 2015)

"Planetary Processes as False Positives for Life", General Exam (UW, 2014)

"Scattering of Light and the Color of Planets", Lakewood High Outreach (2014)

"Non-photosynthetic Pigments: Adventures in Microbiology and Spectral Modeling" Astrobiology PhD Program Research Rotation Talk (UW, 2013)

UW League of Astronomers, "Being a Graduate Student" (UW, 2013)

"Scattering of Light", Lakewood High Outreach (2013)