

# Alex R. Hagen

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## CONTACT INFORMATION

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## RESEARCH INTERESTS

Galaxy formation & evolution, Lyman- $\alpha$  emitting galaxies, astrostatistics

## EDUCATION

**The Pennsylvania State University**, University Park, PA  
M.S. Astronomy & Astrophysics, June 2013  
Ph.D Candidate in Astronomy & Astrophysics

**Harvey Mudd College**, Claremont, CA  
B.S. Physics with an emphasis in Astrophysics, May 2010

## PUBLICATIONS

- **Hagen, A.** et al. *The Rest-Frame Optical Morphology of Emission Line Galaxies at  $2 \lesssim z \lesssim 3$ : Evidence for Inside-Out Formation in Low-Mass Galaxies.* 2016, ApJ, Submitted, arXiv:1610.01163
- **Hagen, A.**, et al. *HST Emission Line Galaxies at  $z \sim 2$ : Comparing Physical Properties of Lyman Alpha and Optical Emission Line Selected Galaxies.* 2016, ApJ, 817, 79
- **Hagen, A.**, et al. *Spectral Energy Distribution Fitting of HETDEX Pilot Survey Ly $\alpha$  Emitters in COSMOS and GOODS-N.* 2014, ApJ, 786, 59
- Hagen, L.M.Z. et al. (**Hagen 6th Author**) *Swift Ultraviolet Survey of the Magellanic Clouds (SUMaC). I. Shape of the Ultraviolet Dust Extinction Law and Recent Star Formation History of the Small Magellanic Cloud,* MNRAS, Submitted, arXiv:1611.00064
- Munda, D. et al. *The Astropy Problem,* 2016, arXiv:1610.03159
- de Souza, R.S. et al. (**Hagen 10th Author**) *Is the cluster environment quenching the Seyfert activity in elliptical and spiral galaxies?,* 2016, MNRAS, 461, 2115
- SDSS Collaboration et al. *The Thirteenth Data Release of the Sloan Digital Sky Survey: First Spectroscopic Data from the SDSS-IV Survey Mapping Nearby Galaxies at Apache Point Observatory,* 2016, ApJS, Submitted, arXiv:1608.02013
- Hagen, L.M.Z. et al. (**Hagen 3rd Author**) *On the Classification of UGC 1382 as a Giant Low Surface Brightness Galaxy,* 2016, ApJ, 826, 210
- Grasshorn Gebhardt, H. et al. (**Hagen 5th Author**) *Young, Star-forming Galaxies and Their Local Counterparts: The Evolving Relationship of Mass-SFR-Metallicity Since  $z \sim 2.1$ ,* 2015, ApJ, 817, 10
- Zeimann, G. et al. (**Hagen 9th Author**) *The Dust Attenuation Curve versus Stellar Mass for Emission Line Galaxies at  $z \sim 2$ ,* 2015, ApJ, 814, 162
- Leung, A. et al. (**Hagen 12th Author**) *Bayesian Redshift Classification of Emission-line Galaxies with Photometric Equivalent Widths,* ApJ, submitted, arXiv:1510.07043
- Trump, J. et al. (**Hagen 7th Author**) *The Biases of Optical Line-Ratio Selection for Active Galactic Nuclei, and the Intrinsic Relationship between Black Hole Accretion and Galaxy Star Formation,* 2015, ApJ, 811, 26

- Thomas, B. et al. (**Hagen 30th Author**) *Learning from FITS: Limitations in use in Modern Astronomical Research*. 2015, *Astronomy & Computing*, 12, 133
- Hagen, L.M.Z. et al. (**Hagen 7th Author**) *The Evolution of the Far-UV Luminosity Function and Star Formation Rate Density of the Chandra Deep Field South from  $z = 0.2$  to  $1.2$  with Swift/UVOT*, *ApJ*, 08 179
- Chiang, Y.K. et al. **Hagen 11th Author** *Surveying Galaxy Proto-clusters in Emission: A Large-scale Structure at  $z = 2.44$  and the Outlook for HETDEX*, *ApJ*, 808, 37
- Bridge, J., et. al. (**Hagen 4th Author**) *Physical and Morphological Properties of [O II] Emitting Galaxies in the HETDEX Pilot Survey*, 2015, *ApJ*, 799, 205
- Newman, J. et al. (**Hagen 28th author**) *Spectroscopic Needs for Imaging Dark Energy Experiments*. 2015, *Astroparticle Physics*, 63, 81
- Zeimann, G. et al. (**Hagen 5th Author**) *Hubble Space Telescope Emission Line Galaxies at  $z \sim 2$ : The Mystery of Neon*, 2015, *ApJ*, 798. 29
- Ciardullo, R., et al. (**Hagen 6th Author**) *Hubble Space Telescope Emission Line Galaxies at  $z \sim 2$ : The Ly $\alpha$  Escape Fraction*, 2014, *ApJ*, 796, 64
- Song, M., et. al. (**Hagen 16th Author**) *The HETDEX Pilot Survey V: The Physical Origin of Lyman-alpha Emitters Probed by Near-Infrared Spectroscopy*. 2014, *ApJ*, 791, 3
- Zeimann, G. et al. (**Hagen 6th Author**) *3D-HST Emission Line Galaxies at  $z \sim 2$ : Discrepancies in the Optical/UV Star Formation Rates*, 2014, *ApJ*, 790, 113
- Davenport, J. et al. (**Hagen 4th author**) *Studying Gender in Conference Talks – data from the 223rd meeting of the American Astronomical Society*. 2014, arXiv:1403.3091
- Vargas, C. et al. (**Hagen 12th author**) *To Stack or Not to Stack: Spectral Energy Distribution Properties of Ly $\alpha$ -Emitting Galaxies at  $z=2.1$*  2014, *ApJ*, 783, 26
- Feldmeier, J. & **Hagen, A.** et al. *Searching for Neutral Hydrogen Halos around  $z \sim 2.1$  and  $z \sim 3.1$  Ly-alpha Emitting Galaxies*. 2013. *ApJ*, 776, 75
- Chonis, T. et al. (**Hagen 11th author**) *The Spectrally Resolved Ly $\alpha$  Emission of Three Ly $\alpha$ -selected Field Galaxies at  $z \sim 2.4$  from the HETDEX Pilot Survey* 2013. *ApJ*, 775, 99
- Chiang, C. et al. (**Hagen 12th author**) *Galaxy redshift surveys with sparse sampling*. 2013, *JCAP*, 12, 30
- Bhattacharya, B. et al (**Hagen 16th author**). *Mid-Infrared Photometric Analysis of Main Belt Asteroids: A Technique for Color-Color Differentiation from Background Astrophysical Sources*. 2010. *ApJ*, 720, 114
- **Hagen, A.** *A Robotic Observation System and its Applications to Near Earth Objects, Supernovae, and Other Astronomical Transients* 2010. Undergraduate Thesis. Harvey Mudd College

## PRESENTATIONS

I am an author or co-author on 24 presentation at professional meetings. Listed here are a subset of these posters or presentations. I have been twice awarded a Graduate Honorable Mention by the American Astronomical Society for my poster presentations.

- **Hagen, A.** et al. *The HETDEX Pilot Survey & 3DHST: What Makes a Lyman-alpha Emitter?*. AAS Meeting #225, 2015
- **Hagen, A.** et al. *Spectral Energy Distribution Fitting of HETDEX Pilot Survey Lyman-alpha Emitters in COSMOS and GOODS-N*. AAS Meeting #223. 2014
- **Hagen, A.** et al. *A Search for Diffuse Ly-alpha Emitting Halos around  $z=2.1$  and  $z=3.1$  Ly-alpha Emitting Galaxies*. AAS Meeting #220. 2012.
- **Hagen, A.**, Bhattacharya, B., & Penprase, B. *Optical Light Curves of 42 Isis Taken in Support*

*of Spitzer Space Telescope Observations.* AAS Meeting #213. 2009.

#### TALKS

- STScI Galaxy Journal Club Talk. September 2016
- Penn State Astronomy & Astrophysics Lunch Talk. August 2016
- Leibniz Institute for Astrophysics Potsdam Seminar. March 2016.
- Geneva Observatory Presentation. March 2016.
- Penn State Astronomy & Astrophysics Lunch Talk. February 2016
- University of Ehime Seminar. August 2015.
- University of Nagoya Seminar. July 2015.
- University of Tokyo Institute for Physics and Mathematics of the Universe Seminar. July 2015.
- National Astronomy Observatories of Japan Seminar. July 2015.
- University of Kyoto Seminar. July 2015.
- University of Tokyo Seminar. July 2015.
- Stockholm University Invited Colloquium. April 2015.
- Max Planck Institute für Astrophysik Galaxy Group Seminar. April 2015.
- Max Planck Institute für Astrophysik Talk on Astropy. April 2015
- Penn State Astronomy & Astrophysics Lunch Talk. September 2014
- Franklin & Marshall College Department of Physics & Astronomy Colloquium. October 2013
- Talk at “Lyman- $\alpha$  as an Astrophysical Tool”. Stockholm, Sweden. September 2013
- Penn State Astronomy & Astrophysics Lunch Talk. February 2013

#### PROFESSIONAL HONORS & MEMBERSHIP

- Penn State Astronomy Downsborough Fellowship. 2016
- NSF East Asia & Pacific Summer Institute Fellow at the University of Tokyo, Japan. 2015.
- Penn State Astronomy Stephen B. Brumbach Fellowship. 2013
- Chambliss Astronomy Achievement Award – Graduate Honorable Mention. American Astronomical Society Meeting #223. January 2014
- Chambliss Astronomy Achievement Award – Graduate Honorable Mention. American Astronomical Society Meeting #220. June 2012
- Junior Member of the American Astronomical Society 2009 – Present

#### PROFESSIONAL SERVICE

- Referee for Monthly Notices of the Royal Astronomical Society
- Member of the Committee on the Participation of Women in the Sloan Digital Sky Survey, 2015-2016

#### PUBLIC OUTREACH

Co-founded a discussion group in the Penn State Astro Dept. called Towards a More Inclusive Astronomy that seeks to provide a safe space for people of all identities to learn and become better allies.

Radio guest discussing astronomy on State College, PA radio station 98.7 *FREQ*. I’m also part of a group that provides a monthly short segment on what’s observable in the sky.

Co-author on Lea M.Z. Hagen’s recent paper “On the Classification of UGC 1382 as a Giant Low Surface Brightness Galaxy”, which was covered in a NASA JPL press release that led to hundreds

of articles on the discovery around the world including being featured on CNN, and Slate.

Member of the local organizing committee for the APS Conference for Undergraduate Women in Physics held at Penn State in 2014. My work as a mentor for the High School Women in Science day was featured in our local newspaper, the Centre Daily Times.

Actively involved in outreach in the department of Astronomy and Astrophysics with AstroFest, AstroNight, and other activities.

Appeared in **Decoding the Skies**, an episode of the *Known Universe* series on the National Geographic Channel. Discussed archeoastronomy with Prof. Bryan Penprase in and around the ancient pueblos of Chaco Culture National Historic Park.

#### RESEARCH EXPERIENCE

**Pennsylvania State University**, University Park, PA

*Graduate Student with Robin Ciardullo & Caryl Gronwall* **August 2011 – Present**

**Northern Arizona University**, Flagstaff, AZ

*Scientific Programmer for David Trilling* **August 2010 – July 2011**

**Pomona College**, Claremont, CA

*Research Assistant to Bryan Penprase* **January 2009 – May 2010**

#### TEACHING EXPERIENCE

Instructor of record for 7 sections of Astro 11 and TA for Astro 1, 5, 10 & 140 from Fall 2011 – Fall 2015.

Currently working with Dr. Julia Kregenow and other graduate students on curriculum development for Astro 11.

Student Responses on evaluations of my teaching:

“I thought he was great. Seemed to really enjoy his field which is exactly what you want especially in a young professor and in an entry level class.”

“One of the best instructors I’ve had. He listens to the students and seems to genuinely care about them. Mr. Hagen doesn’t reply with vague answers about course content, he makes sure the student goes away with an understanding to their question.”

“I liked astronomy before taking the class. Now I love it.”

“Professor Hagen. He is seriously the man. His enthusiasm alone made coming to class interesting and any time I had a question, his answers were very clear and extremely helpful.”

#### OBSERVING EXPERIENCE

- LCO 6.5-m Magellan Clay Telescope – MIKE & MagE
- KPNO 4-m Mayall – RC Spectrograph & Mosaic 1.1
- McDonald Observatory 2.7m – VIRUS-P
- LCO 2.5-m Du Pont – Echelle
- MGIO 1.8-m VATT – CCD
- LCO 1-m Swope Telescope – CCD
- Table Mountain Observatory 1-m (Pomona College) – CCD
- CTIO SMARTS 0.9-m – CCD
- 14-in Brackett Observatory (Pomona College) – CCD
- 14-in Pomona College Internet Observatory – CCD

#### COMPUTER SKILLS

- Data Analysis & Programming: Python–NumPy, SciPy, & AstroPy; IRAF; IDL; R; Julia
- Member of the AstroPy Project to develop open-source data analysis tools for the astronomical community.