

Johannes Ulf Lange

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RESEARCH INTERESTS

Galaxy-Halo Connection, Galaxy Formation Theory, Cosmology, Large-Scale Structure, Statistical Methods and Machine Learning

EDUCATION

| | |
|--|-------------------|
| Yale University M.Sc., M.Phil, Ph.D. in Astronomy | 08/2014 – 08/2019 |
| Ruprecht-Karls-Universität Heidelberg Master of Science in Physics | 09/2012 – 08/2014 |
| Freie Universität Berlin Bachelor of Science in Physics | 10/2009 – 08/2012 |

RESEARCH

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|--|-------------------|
| Yale University Graduate Student Researcher The Galaxy-Halo Connection Advisor: Frank van den Bosch | 08/2014 – present |
| Shanghai Jiao Tong University Visiting Scholar The Non-Linear Galaxy Clustering and Lensing in BOSS Advisor: Xiaohu Yang | 05/2018 – 07/2018 |
| Kavli Institute for Theoretical Physics KITP Graduate Fellow The Galaxy-Halo Connection | 01/2017 – 07/2017 |
| The Chinese University of Hong Kong Postgraduate Research Exchange Program Dark Matter Annihilation and the Cosmic Gamma-Ray Background Advisor: Ming Chung Chu | 08/2013 – 07/2014 |
| German Electron Synchrotron (DESY) Bachelor Thesis The average GeV-band Emission from Gamma-Ray Bursts Advisor: Martin Pohl | 04/2012 – 07/2012 |
| University of California, Santa Barbara Undergraduate Research Search for a Higgs Boson in the Decay Channel $H \rightarrow Z\gamma$ Advisor: Claudio Campagnari | 09/2011 – 03/2012 |

PUBLICATIONS

- [13] **J. U. Lange**, X. Yang, H. Guo, W. Luo, and F. C. van den Bosch. “New perspectives on the BOSS small-scale lensing discrepancy for the Planck Λ CDM cosmology”. In: *arXiv e-prints*, arXiv:1906.08680 (June 2019), arXiv:1906.08680. arXiv: 1906.08680 [astro-ph.CO].
- [12] K. Wang, Y.-Y. Mao, A. R. Zentner, F. C. van den Bosch, **J. U. Lange**, C. M. Schafer, A. S. Villarreal, A. P. Hearin, and D. Campbell. “How to Optimally Constrain Galaxy Assembly Bias: Supplement Projected Correlation Functions with Count-in-cells Statistics”. In: *MNRAS* (June 2019), p. 1686. arXiv: 1903.09656 [astro-ph.CO].
- [11] **J. U. Lange**, F. C. van den Bosch, A. R. Zentner, K. Wang, and A. S. Villarreal. “Updated results on the galaxy-halo connection from satellite kinematics in SDSS”. In: *MNRAS* 487.3 (Aug. 2019), pp. 3112–3129. arXiv: 1811.03596 [astro-ph.CO].
- [10] **J. U. Lange**, F. C. van den Bosch, A. R. Zentner, K. Wang, and A. S. Villarreal. “Maturing satellite kinematics into a competitive probe of the galaxy-halo connection”. In: *MNRAS* 482 (Feb. 2019), pp. 4824–4845. arXiv: 1810.10511 [astro-ph.CO].
- [9] D. Campbell, F. C. van den Bosch, N. Padmanabhan, Y.-Y. Mao, A. R. Zentner, **J. U. Lange**, F. Jiang, and A. Villarreal. “The galaxy clustering crisis in abundance matching”. In: *MNRAS* 477 (June 2018), pp. 359–383. arXiv: 1705.06347.
- [8] **J. U. Lange**, F. C. van den Bosch, A. Hearin, D. Campbell, A. R. Zentner, A. Villarreal, and Y.-Y. Mao. “Brightest galaxies as halo centre tracers in SDSS DR7”. In: *MNRAS* 473 (Jan. 2018), pp. 2830–2851. arXiv: 1705.05043.
- [7] A. S. Villarreal, A. R. Zentner, Y.-Y. Mao, C. W. Purcell, F. C. van den Bosch, B. Diemer, **J. U. Lange**, K. Wang, and D. Campbell. “The inmitigable nature of assembly bias: the impact of halo definition on assembly bias”. In: *MNRAS* 472 (Nov. 2017), pp. 1088–1105. arXiv: 1705.04327.
- [6] E. J. Nelson et al, including **J. U. Lange**. “Where Stars Form: Inside-out Growth and Coherent Star Formation from HST $H\alpha$ Maps of 3200 Galaxies across the Main Sequence at $0.7 < z < 1.5$ ”. In: *ApJ* 828, 27 (Sept. 2016), p. 27. arXiv: 1507.03999.
- [5] I. G. Momcheva et al, including **J. U. Lange**. “The 3D-HST Survey: Hubble Space Telescope WFC3/G141 Grism Spectra, Redshifts, and Emission Line Measurements for $\sim 100,000$ Galaxies”. In: *ApJS* 225, 27 (Aug. 2016), p. 27. arXiv: 1510.02106.
- [4] A. R. Zentner, A. Hearin, F. C. van den Bosch, **J. U. Lange**, and A. Villarreal. “Constraints on Assembly Bias from Galaxy Clustering”. In: *ArXiv e-prints* (June 2016). Submitted to *MNRAS*. arXiv: 1606.07817.
- [3] **J. U. Lange**, P. G. van Dokkum, I. G. Momcheva, E. J. Nelson, J. Leja, G. Brammer, K. E. Whitaker, and M. Franx. “Evidence for Non-stellar Rest-frame Near-IR Emission Associated with Increased Star Formation in Galaxies at $z \sim 1$ ”. In: *ApJL* 819, L4 (Mar. 2016), p. L4. arXiv: 1602.05967.
- [2] **J. U. Lange** and M.-C. Chu. “Can galactic dark matter substructure contribute to the cosmic gamma-ray anisotropy?” In: *MNRAS* 447 (Feb. 2015), pp. 939–947. arXiv: 1412.5749.
- [1] **J. Lange** and M. Pohl. “The average GeV-band emission from gamma-ray bursts”. In: *A&A* 551, A89 (Mar. 2013), A89. arXiv: 1301.2914 [astro-ph.HE].

TALKS

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| CCAPP Seminar (invited) | 01/2019 |
| Center for Cosmology and AstroParticle Physics | |
| Cosmology Seminar | 12/2018 |

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| Max Planck Institute for Astrophysics | |
| NYU-CCA LSS Group Meeting Center for Computational Astrophysics | 10/2018 |
| BCCP Seminar (invited) University of California, Berkeley | 09/2018 |
| CosmoClub University of California, Santa Cruz | 09/2018 |
| SUGAR-RUSH Conference Shanghai Jiao Tong University | 06/2018 |
| KIPAC Tea Talk SLAC National Accelerator Laboratory | 03/2018 |
| Astronomy Seminar University of California, Riverside | 03/2018 |
| Galaxy Coffee Max Planck Institute for Astronomy | 01/2018 |
| The Galaxy-Halo Connection Across Cosmic Time (invited) Kavli Institute for Theoretical Physics | 07/2017 |
| Quantifying and Understanding the Galaxy-Halo Connection Kavli Institute for Theoretical Physics | 05/2017 |
| Astroparticle Physics Seminar German Electron Synchrotron (DESY) | 07/2014 |
| Conference of the Physical Society of Hong Kong Hong Kong Baptist University | 06/2014 |
| IAS Workshop on New Perspectives in Cosmology Hong Kong University of Science and Technology | 05/2014 |

TEACHING

- Astrostatistics and Data Mining, Lab Leader, Yale University, Spring 2018
- Introduction to Astronomical Observing, Lab TA, Yale University, Fall 2017
- Astrostatistics and Data Mining, Lab Leader, Yale University, Spring 2016
- Introduction to Cosmology, Section Leader, Yale University, Fall 2015
- Gravity, Astrophysics, and Cosmology, Grader, Yale University, Spring 2015
- Introduction to Astronomical Observing, Lab TA, Yale University, Fall 2014

OUTREACH

- Talk at Leitner Family Observatory & Planetarium, New Haven, CT, February 2018
- Talk at Open Labs Science Cafe, Yale University, New Haven, CT, October 2017
- Member of Open Labs, Yale University, New Haven, CT, since 2016
- Tutor at New Haven Reads, New Haven, CT, 2015 - 2018
- Member of UCSB Physics Circus, UC Santa Barbara, Santa Barbara, CA, 2012

SKILLS

- Programming Languages – C/C++, Python, Cython, Java
- Scientific Applications – NumPy, SciPy, matplotlib, LaTeX, git
- Languages – German (native), English (fluent), Chinese (basic)

HONORS AND AWARDS

- KITP Graduate Fellowship Program
- Henry A. Smith Fellowship, Yale University
- DAAD (German Academic Exchange Service) Scholarship
- Deutschlandstipendium National Scholarship Program
- Ernst Reuter Scholarship, Free University of Berlin
- Dean's List, University of California, Santa Barbara