

# Johannes Ulf Lange

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## RESEARCH INTERESTS

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

## EDUCATION

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<b>Yale University</b> M.Sc., M.Phil, Ph.D. in Astronomy Thesis Advisor: Frank van den Bosch	08/2014 – 08/2019
<b>Ruprecht-Karls-Universität Heidelberg</b> Master of Science in Physics	09/2012 – 08/2014
<b>Freie Universität Berlin</b> Bachelor of Science in Physics	10/2009 – 08/2012

## POSITIONS

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<b>Kavli Institute for Particle Astrophysics and Cosmology</b> Stanford–Santa Cruz Cosmology Postdoctoral Fellow	09/2021 – 08/2023
<b>University of California, Santa Cruz</b> Stanford–Santa Cruz Cosmology Postdoctoral Fellow	09/2019 – 08/2021

## FIRST-AUTHOR PUBLICATIONS

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- [10] **J. U. Lange**, A. P. Hearin, A. Leauthaud, F. C. van den Bosch, H. Guo, and J. DeRose. “Five-percent measurements of the growth rate from simulation-based modelling of redshift-space clustering in BOSS LOWZ”. *arXiv e-prints*, arXiv:2101.12261 (Jan. 2021), arXiv:2101.12261.
- [9] **J. U. Lange**, A. Leauthaud, S. Singh, H. Guo, R. Zhou, T. L. Smith, and F.-Y. Cyr-Racine. “On the halo-mass and radial scale dependence of the lensing is low effect”. *MNRAS* 502.2 (Apr. 2021), pp. 2074–2086.
- [8] **J. U. Lange**, F. C. van den Bosch, A. R. Zentner, K. Wang, A. P. Hearin, and H. Guo. “Cosmological Evidence Modelling: a new simulation-based approach to constrain cosmology on non-linear scales”. *MNRAS* 490.2 (Dec. 2019), pp. 1870–1878.
- [7] **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  $\Lambda$ CDM cosmology”. *MNRAS* 488.4 (Oct. 2019), pp. 5771–5787.
- [6] **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”. *MNRAS* 487.3 (Aug. 2019), pp. 3112–3129.

- [5] **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”. *MNRAS* 482.4 (Feb. 2019), pp. 4824–4845.
- [4] **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”. *MNRAS* 473.2 (Jan. 2018), pp. 2830–2851.
- [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  $z \sim 1$ ”. *ApJL* 819.1, L4 (Mar. 2016), p. L4.
- [2] **J. U. Lange** and M. .-C. Chu. “Can galactic dark matter substructure contribute to the cosmic gamma-ray anisotropy?” *MNRAS* 447.1 (Feb. 2015), pp. 939–947.
- [1] **J. Lange** and M. Pohl. “The average GeV-band emission from gamma-ray bursts”. *A&A* 551, A89 (Mar. 2013), A89.

## CO-AUTHOR PUBLICATIONS

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- [10] S. Huang, A. Leauthaud, C. Bradshaw, A. Hearin, P. Behroozi, **J. Lange**, J. Greene, J. DeRose, J. S. Speagle, and E. Khakaj. “The Outer Stellar Mass of Massive Galaxies: A Simple Tracer of Halo Mass with Scatter Comparable to Richness and Reduced Projection Effects”. *arXiv e-prints*, arXiv:2109.02646 (Sept. 2021), arXiv:2109.02646.
- [9] E. Khakaj, A. Leauthaud, **J. Lange**, A. Hearin, B. Diemer, and N. Dalal. “Beyond Mass: Detecting Secondary Halo Properties with Galaxy-Galaxy Lensing”. *arXiv e-prints*, arXiv:2106.06656 (June 2021), arXiv:2106.06656.
- [8] K. Wang, Y.-Y. Mao, A. R. Zentner, **J. U. Lange**, F. C. van den Bosch, and R. H. Wechsler. “Concentrations of dark haloes emerge from their merger histories”. *MNRAS* 498.3 (Nov. 2020), pp. 4450–4464.
- [7] F. C. van den Bosch, **J. U. Lange**, and A. R. Zentner. “Basilisk: Bayesian hierarchical inference of the galaxy-halo connection using satellite kinematics - I. Method and validation”. *MNRAS* 488.4 (Oct. 2019), pp. 4984–5013.
- [6] 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”. *MNRAS* 488.3 (Sept. 2019), pp. 3541–3567.
- [5] A. R. Zentner, A. Hearin, F. C. van den Bosch, **J. U. Lange**, and A. Villarreal. “Constraints on assembly bias from galaxy clustering”. *MNRAS* 485.1 (May 2019), pp. 1196–1209.
- [4] 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 inimitable nature of assembly bias: the impact of halo definition on assembly bias”. *MNRAS* 472.1 (Nov. 2017), pp. 1088–1105.
- [3] 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”. *MNRAS* 477.1 (June 2018), pp. 359–383.

- [2] I. G. Momcheva et al. “The 3D-HST Survey: Hubble Space Telescope WFC3/G141 Grism Spectra, Redshifts, and Emission Line Measurements for  $\sim 100,000$  Galaxies”. *ApJS* 225.2, 27 (Aug. 2016), p. 27.
- [1] E. J. Nelson et al. “Where Stars Form: Inside-out Growth and Coherent Star Formation from HST H $\alpha$  Maps of 3200 Galaxies across the Main Sequence at  $0.7 < z < 1.5$ ”. *ApJ* 828.1, 27 (Sept. 2016), p. 27.

## INVITED TALKS

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<b>HEAP Seminar</b> University of Utah	12/2021
<b>Astronomy Colloquium</b> Swinburne University of Technology	09/2021
<b>Growth of Structure Webinar</b> University of California, Santa Cruz	06/2021
<b>Growth of Structure Webinar</b> University of California, Santa Cruz	06/2021
<b>Research Progress Meeting</b> Lawrence Berkeley National Laboratory	01/2019
<b>CCAPP Seminar</b> Center for Cosmology and AstroParticle Physics	01/2019
<b>BCCP Seminar</b> University of California, Berkeley	09/2018
<b>The Galaxy-Halo Connection Across Cosmic Time</b> Kavli Institute for Theoretical Physics	07/2017

## TEACHING

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- Certificate of College Teaching Preparation from Yale University
- 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

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- Talk at Astronomy on Tab, New Haven, CT, 06/2019
- Talk at Institute for Learning in Retirement, New Haven, CT, 04/2019
- Talks at Leitner Family Observatory, New Haven, CT, 02/2018 and 05/19
- Talks at Open Labs Science Cafe, Yale University, New Haven, CT, 10/2017 and 04/19

- Member of Open Labs, Yale University, New Haven, CT, 2016 - 2019
- Tutor at New Haven Reads, New Haven, CT, 2015 - 2018
- Member of UCSB Physics Circus, UC Santa Barbara, Santa Barbara, CA, 2012

## HONORS AND AWARDS

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- Brouwer Thesis Prize, Yale University
- Cosmology Fellowship, University of California, Santa Cruz and Stanford University
- Graduate Fellowship Program, Kavli Institute for Theoretical Physics
- 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

## LEADERSHIP AND SERVICE

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- Member of the Dark Energy Spectroscopic Instrument (DESI) Collaboration and the DESI Early Career Scientists Committee
- Referee for Astronomy & Astrophysics, Monthly Notices of the Royal Astronomical Society and The Astrophysical Journal
- Organizer for the KITP Online Conference "The Galaxy-Halo Connection Across Cosmic Time: Recent Updates", 08/2020
- Organizer for the KIPAC Online Workshop "Precision Measurements and Modeling of Lensing and Clustering in the DESI Era", 07/2020

## REFERENCES

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### **Frank C. van den Bosch**

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### **Alexie Leauthaud**

Department of Astronomy & Astrophysics  
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