

LEHMAN H. GARRISON

Cosmology — Large-Scale Structure
High-Performance Computing —
N-body Simulations

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| EMPLOYMENT | Flatiron Research Fellow Cosmology X Data Science Group Center for Computational Astrophysics Flatiron Institute, New York, NY | 2019–present |
| EDUCATION | Ph.D., Astronomy and Astrophysics <i>Harvard University</i> , Cambridge, MA Thesis: <i>Computational Modeling of Large-Scale Structure with Abacus</i> Advisor: Daniel J. Eisenstein | 2013–2019 |
| | B.A., Astrophysical Sciences (High Honors) <i>Princeton University</i> , Princeton, NJ Thesis: <i>Galactic Warp Excitation by the Magellanic Clouds</i> Advisors: David N. Spergel, Naoki Yoshida (U. Tokyo) | 2009–2013 |
| AWARDS AND HONORS | Eric Keto Prize for Best Ph.D. Thesis in Theoretical Astrophysics at Harvard University | April 2019 |
| | Smith Family Graduate Science and Engineering Fellowship <i>Harvard University</i> | 2013 |
| | Sigma Xi Book Award , Best Senior Thesis in Astronomy Department of Astrophysical Sciences, Princeton University | June 2013 |
| SELECTED PUBLICATIONS | First Author Publications <ol style="list-style-type: none">4. <i>Generating approximate halo catalogues for blind challenges in precision cosmology</i>, Garrison, L. H., & Eisenstein, D. J. 2019, Monthly Notices of the Royal Astronomical Society, 485, 24073. <i>A high-fidelity realization of the Euclid code comparison N-body simulation with Abacus</i>, Garrison, L. H., Eisenstein, D. J., & Pinto, P. A. 2019, Monthly Notices of the Royal Astronomical Society, 485, 33702. <i>The abacus cosmos: a suite of cosmological N-body simulations</i>, Garrison, L. H., Eisenstein, D. J., Ferrer, D., et al. 2018, The Astrophysical Journal Supplement Series, 236, 431. <i>Improving initial conditions for cosmological N-body simulations</i>, Garrison, L. H., Eisenstein, D. J., Ferrer, D., Metchnik, M. V., & Pinto, | |

P. A. 2016, Monthly Notices of the Royal Astronomical Society, 461, 4125

Contributing Author Publications

9. *Testing dark matter halo properties using self-similarity*, Leroy, M., **Garrison, L. H.**, Eisenstein, D., Joyce, M., & Maleubre, S. 2021, Monthly Notices of the Royal Astronomical Society, 501, 5064
8. *Quantifying resolution in cosmological N-body simulations using self-similarity*, Joyce, M., **Garrison, L. H.**, & Eisenstein, D. 2021, Monthly Notices of the Royal Astronomical Society, 501, 5051
7. *corrfunc—a suite of blazing fast correlation functions on the CPU*, Sinha, M., & **Garrison, L. H.** 2020, Monthly Notices of the Royal Astronomical Society, 491, 3022
6. *Cosmology with galaxy–galaxy lensing on non-perturbative scales: emulation method and application to BOSS LOWZ*, Wibking, B. D., Weinberg, D. H., Salcedo, A. N., et al. 2020, Monthly Notices of the Royal Astronomical Society, 492, 2872
5. *Emulating galaxy clustering and galaxy–galaxy lensing into the deeply non-linear regime: methodology, information, and forecasts*, Wibking, B. D., Salcedo, A. N., Weinberg, D. H., et al. 2019, Monthly Notices of the Royal Astronomical Society, 484, 989
4. *A Hybrid Deep Learning Approach to Cosmological Constraints From Galaxy Redshift Surveys*, Ntampaka, M., Eisenstein, D. J., Yuan, S., & **Garrison, L. H.** 2019, arXiv preprint arXiv:1909.10527
3. *Testing the Detection Significance on the Large-scale Structure by a JWST Deep Field Survey*, Zhang, H., Eisenstein, D. J., **Garrison, L. H.**, & Ferrer, D. W. 2019, The Astrophysical Journal, 875, 132
2. *Exploring the squeezed three-point galaxy correlation function with generalized halo occupation distribution models*, Yuan, S., Eisenstein, D. J., & **Garrison, L. H.** 2018, Monthly Notices of the Royal Astronomical Society, 478, 2019
1. *Using galaxy pairs to investigate the three-point correlation function in the squeezed limit*, Yuan, S., Eisenstein, D. J., & **Garrison, L. H.** 2017, Monthly Notices of the Royal Astronomical Society, 472, 577

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| PROFESSIONAL SERVICE | <i>Co-chair</i> , DESI Cosmological Simulations Working Group | Oct. 2020– |
| | <i>Referee</i> , MNRAS & ApJ | since 2016 |
| | <i>Graduate Student Representative</i> , CfA Library Committee | 2017–2019 |

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| OUTREACH | <i>Mentor</i> , CUNY Hackathon | Jan. 2021 |
| | <ul style="list-style-type: none"> Supported hackathon teams at the City University of New York | |
| | <i>Comedian</i> , Science Riot | July 2020 |
| | <ul style="list-style-type: none"> Wrote and delivered a short stand-up comedy routine about N-body cosmology | |
| | <i>Observer</i> , Harvard Observing Project | 2014–2019 |
| | <ul style="list-style-type: none"> Taught undergrads and community members how to make scientific measurements on a telescope | |
| | <i>Volunteer</i> , Cambridge Explores the Universe | Summers 2015–2018 |
| TEACHING | <i>Author</i> , BiteScis Lesson Plan: Shooting for the Stars | March 2018 |
| | <ul style="list-style-type: none"> Created an open-access high school physics lesson plan based on Breakthrough Starshot | |
| | <i>SAO Latino Initiative</i> , Guest Instructor | Summers 2017 - 2019 |
| | <i>Banneker & Aztlán Institute</i> , Tutor | Summer 2017 |
| | <i>Teaching Fellow</i> | |
| | <ul style="list-style-type: none"> PHYS P-17010 <i>Introduction to Cosmology</i> | Summer 2017 |
| | <ul style="list-style-type: none"> AST S-35 <i>Fundamentals of Contemporary Astro.</i> | Summer 2015 |
| | <ul style="list-style-type: none"> CS 109 <i>Data Science</i> | Fall 2013 |
| | <i>Lecturer</i> , Wolbach Library at the Harvard-Smithsonian CfA | 2017 |
| | <ul style="list-style-type: none"> Lecture series on modern Python for astronomy, beginner to expert level | |