# ChangHoon Hahn

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changhoon.hahn@princeton.edu

## APPOINTMENTS

Princeton University, Department of Astrophysical Sciences — 2020 -
Postdoctoral Research Associate

Lawrence Berkeley National Laboratory and UC Berkeley — 2017 - 2020
Postdoctoral Fellow

## EDUCATION

New York University — Ph.D. in Physics — 2011 - 2017
*Advisors* : Michael R. Blanton and Roman Scoccimarro
*Thesis* : *Galaxies and their Host Dark Matter Structures*

Rutgers University — B.Sc. in Astrophysics — 2007 - 2011
*Advisors* : Andrew J. Baker and Jerry A. Sellwood
*Awards* : *Paul Robeson Scholar*

## GRANTS AND FELLOWSHIPS

Extreme Science and Engineering Discovery Environment (XSEDE) Startup — 2022 - 2023
PI; *Accelerated SED Modeling of Millions of Galaxies* — 2,500 GPU Hours

Dean's Dissertation Fellowship, New York University — 2016

James Arthur Graduate Fellowship, New York University — 2015

Henry M. MacCracken Fellowship, New York University — 2011 - 2015

Dean's Travel Grant, New York University — 2015, 2016

## LEADERSHIP AND COLLABORATIONS

PFS, Subaru Prime Focus Spectrograph

***co-leader***, PFS Cosmology Survey — 2022 -
*member*, PFS Galaxy Evolution Survey — 2021 -

DESI, Dark Energy Spectroscopic Instrument

***Builder***, awarded for 3000+ hours of service — 2022 -
***co-chair***, Bright Galaxy Survey Working Group — 2019 - 2022
*member*, Science Committee — 2019 - 2022
*member*, External Collaborator Committee — 2023 -
*topical group lead*, Galaxy Quasar Physics Working Group — 2022 -

SimBIG Collaboration, Simulation-Based Inference of Galaxies

***Spokesperson*** — 2021 -

SDSS, Sloan Digital Sky Survey-III, IV

PRIMUS, PRIsm MUlti-object Survey

Scientific collaborations: CAMELS, Quijote, IQ, Learning the Universe

## PROFESSIONAL SERVICE

| | | |
|---|---|---|
| Lead Organizer | Winter 2020 Berkeley Cosmology Conference, UC Berkeley, CA | 2020 |
| Organizer | Bay Area Likelihood-Free Inference Meeting, Berkeley | 2019 |
| Organizer | Likelihood-Free Inference workshop, Flatiron Institute, NYC | 2019 |
| Organizer | Berkeley Lab Institute for Nuclear and Particle Astrophysics Seminar | 2019 - 2020 |
| Organizer | LBNL/BCCP DESI lunch seminar | 2018 - 2020 |
| Organizer | NYU CCPP Astro Coffee | 2014 - 2017 |
| Member | American Physical Society | |
| Member | Statistics Without Borders | |
| Referee | ApJ, MNRAS, JCAP, A&A, PRD, PRL, JOSS, ICML, NeurIPS | |
| Reviewer | NASA Nancy Grace Roman Space Telescope Research Panel | 2023 |
| | FINESST grant | 2019 - 2020 |
| | AAS Chambliss Award | 2017 |
| Attendee | UCSF Scientific Leadership and Management Skills Course | 2021 |

## RESEARCH ADVISING

Graduate Research

| | | | |
|---|---|---|---|
| James Kyubin Kwon | UC Santa Barbara | *3 papers* | 2019 - |
| Yan Liang | Princeton | *2 papers; 1 peer-reviewed conference paper* | 2022 - |
| Jiaxuan Li | Princeton | *1 paper; 1 peer-reviewed conference paper* | 2021 - |
| Christian Jespersen | Princeton | | 2021 - |
| Massimo Pascale | UC Berkeley | | 2019 - 2021 |

Undergraduate Research

| | | |
|---|---|---|
| Yuka Yamada | Princeton/Univ. of Tokyo | 2022 - |
| Arin Avsar | UC Berkeley | 2019 - 2021 |
| Tess Werhane | UC Berkeley | 2019 - 2020 |
| James Zhu | UC Berkeley | 2019 - 2020 |
| Patrick Staudt | Rutgers | 2019 - 2020 |

## TEACHING

Co-Instructor, Princeton University 2021
*Fall 2021 Graduate Seminar in Theoretical Astrophysics (AST541) on Simulation-Based Inference*

Instructor, DESI Early Career Scientist Workshop 2020
*Virtual workshop on spectral energy distribution (SED) analysis of galaxy spectra*

## DIVERSITY, EQUITY, AND INCLUSION

Princeton Astrophysics Climate Committee for Equity and Inclusion 2022 -
*Postdoc representative on the departmental committee tasked with assessing department climate and identifying and recommending ways to improve equity and inclusion.*

Princeton Astrophysics Affinity Group Committee 2022 -
*Coordinating affinity groups for members of historically under-represented groups including Black Latinx, Indigenous, Asian, Pacific Islander, women and gender minorities, and LGBTQ+.*

Princeton Astrophysics Climate Committee Iconography Working Group 2022 -
*Updating iconography in Peyton Hall to improve climate and reflect the diversity in the department.*

Princeton Astrophysics Climate Committee TEAM-UP Working Group 2022 -
*Implementing the TEAM-UP report to increase the number of African-Americans in astrophysics.*

Princeton Astrophysics Equity and Inclusion Committee on Recruitment 2020 - 2021
*Developed actionable plans for recruiting a more diverse body of students, postdocs, and faculty.*

Berkeley Lab In School Settings (BLISS) 2017 - 2019
*Instructed science courses in K-8 classrooms in underserved neighborhoods in Richmond, California*

## OUTREACH

Member, DESI Education and Public Outreach Committee 2020 - 2021
Volunteer, QuarkNet Physics In and Through Cosmology Workshop 2020
Volunteer, UC Berkeley Astro Night 2018 - 2019
Volunteer, Berkeley Lab Exploration of New Discoveries (BLEND): Big Data 2018
Volunteer, Intrepid Museum Kids Week Meet the Scientist 2017
Volunteer, NY Hall of Science Big Data Fest 2015
Appeared in an episode of the NYTimes podcast *Tell Me Something I Don't Know* 2016

## PUBLICATIONS

total: 65 — first author: 21 — total citations 3084, h-index 23, i10-index 32 [ADS] [Google Scholar]

PRIMARY AUTHOR

33. **Hahn, C.**; Lemos, P.; Parker, L.; *et al.* SimBIG*: The First Cosmological Constraints from Non-Gaussian and Non-Linear Galaxy Clustering* Nature Astronomy submitted *2023*
32. **Hahn, C.**; Eickenberg, M.; Ho, S.; *et al.* SimBIG*: The First Cosmological Constraints from the Non-Linear Galaxy Bispectrum* PRD submitted *2023*
31. Régaldo-Saint Blancard; **Hahn, C.**; Ho, S.; *et al.* SimBIG*: Galaxy Clustering Analysis with the Wavelet Scattering Transform* PRD submitted *2023*
30. Lemos, P.; Parker, L.; **Hahn, C.**; *et al.* SimBIG*: Field-level Simulation-Based Inference of Galaxy Clustering* PRD submitted *2023*
29. **Hahn, C.**; Villaescusa-Navarro, F.; Melchior, P.; Teyssier, R. *Cosmology with Galaxy Photometry Alone* ApJL submitted *2023* (arXiv:2310.08634).
28. **Hahn, C.**; Bottrell, C.; Lee, K.G. HaloFlow *I: Neural Inference of Halo Mass from Galaxy Photometry and Morphology* ApJ submitted *2023* (arXiv:2310.04503).
27. **Hahn, C.**; Aguilar, J. N.; Alam, S.; *et al. PROVABGS: The Probabilistic Stellar Mass Function of the BGS One-Percent Survey* ApJ submitted *2023* (arXiv:2306.06318).
26. DESI Collaboration (incl. **Hahn, C.**) *Validation of the Scientific Program for the Dark Energy Spectroscopic Instrument* AJ submitted *2023* (arXiv:2306.06307).
*Led the DESI Bright Galaxy Survey as co-chair.*
25. DESI Collaboration (incl. **Hahn, C.**) *The Early Data Release of the Dark Energy Spectroscopic Instrument* AJ submitted *2023* (arXiv:2306.06308).
*Led the DESI Bright Galaxy Survey as co-chair.*
24. **Hahn, C.**; Eickenberg, M.; Ho, S.; Hou, J.; *et al.* SimBIG*: A Forward Modeling Approach To Analyzing Galaxy Clustering* PNAS, 120, 42 *2023* (arXiv:2211.00723).
23. **Hahn, C.**; Eickenberg, M.; Ho, S.; Hou, J.; *et al.* SimBIG*: Mock Challenge for a Forward Modeling Approach to Galaxy Clustering* JCAP, 04, 010 *2023* (arXiv:2211.00660).
22. Cano, L.; **Hahn, C.** *Who Benefits from Flood Adaptation? — Evidence from US wide time series data* PNAS submitted *2022*.
21. **Hahn, C.**; Wilson, M. J.; Ruiz-Macias, O.; Cole, S.; Weinberg, D. H.; *et al. The DESI Bright Galaxy Survey: Final Target Selection, Design, and Validation* AJ, 165, 253, *2023* (arXiv:2208.08512).

20. Horowitz, B.; **Hahn, C.**; Lanusse, F.; Modi, C.; Ferraro, S. *Differentiable Stochastic Halo Occupation Distribution* MNRAS submitted *2022* (arXiv:2211.03852).
19. Kwon, K. J.; **Hahn, C.**; Alsing, J. *Neural Stellar Population Synthesis Emulator for the DESI PROVABGS* ApJS 265, 23 *2022* (arXiv:2209.14323).
18. **Hahn, C.**; Kwon, K. J.; Tojeiro, R.; Siudek, M.; Canning, R. E. *et al. The DESI PRObabilistic Value-Added Bright Galaxy Survey (PROVABGS) Mock Challenge* ApJ, 945, 16 *2023* (arXiv:2202.01809).
17. **Hahn, C.**; Melchior, P. *Accelerated Bayesian SED Modeling using Amortized Neural Posterior Estimation* ApJ, 938, 1 *2022* (arXiv:2203.07391).
15. **Hahn, C.**; Starkenburg, T. K.; Anglés-Alcázar D.; Choi, E.; Davé, R. *et al. IQ Collaboratory III: The Empirical Dust Attenuation Framework – Taking Hydrodynamical Simulations with a Grain of Dust* ApJ, 926, 122, *2022* (arXiv:2106.09741).
14. **Hahn, C.**, Villaescusa-Navarro, F.; *Constraining $M_\nu$ with the Bispectrum II: The Total Information Content of the Galaxy Bispectrum* JCAP, 04, 029, *2021* (arXiv:2012.02200).
13. **Hahn, C.**; Villaescusa-Navarro, F.; Castorina, E.; Scoccimarro R. *Constraining $M_\nu$ with the Bispectrum I: Breaking Parameter Degeneracies* JCAP, 03, 040, *2020* (arXiv:1909.11107).
12. Villaescusa-Navarro, F.; **Hahn, C.**; Massara, E.; Banerjee, A.; Delgado, A. *et al. The Quijote Simulation* ApJS, 250, 2, *2020* (arXiv:1909.05273).
11. **Hahn, C.**; Tinker, J.; Wetzel, A. *Constraining Star Formation Histories of Blue Galaxies using the Scatter between Stellar Mass and Halo Mass* (arXiv:1910.01644).
10. **Hahn, C.**; Beutler, F.; Sinha, M.; Berlind, A.; Ho, S.; Hogg, D. W. *Likelihood Non-Gaussianity in Large-Scale Structure Analyses* MNRAS, 485, 2956, *2019* (arXiv:1803.06348).
9. **Hahn, C.**; Starkenburg, T.; Choi, E.; Davé, R.; Dickey, C.; Geha, M. *et al. IQ-Collaboratory 1.1: the Star-Forming Sequence of Simulated Central Galaxies* ApJ, 872, 160 *2019* (arXiv:1809.01665).
8. Vakili, M.; **Hahn, C.** *How are galaxies assigned to halos? Searching for assembly bias in the SDSS galaxy clustering* ApJ, 872, 115, *2019* (arXiv:1610.01991).
7. Tinker, J.; **Hahn, C.**; Mao, Y.; Wetzel, A. *Halo Histories versus Galaxy Properties at z=0, III: The Properties of Star-Forming Galaxies* MNRAS, 478, 4487, *2018* (arXiv:1705.08458).
6. Tinker, J.; **Hahn, C.**; Mao, Y.; Wetzel, A.; Conroy, C. *Halo Histories versus Galaxy Properties at z=0, II: Large-Scale Galactic Conformity* MNRAS, 477, 935, *2018* (arXiv:1702.01121).
5. **Hahn, C.**; Tinker, J.; Wetzel, A. *Star Formation Quenching Timescale of Central Galaxies in a Hierarchical Universe* ApJ, 841, 6, *2017* (arXiv:1609.04398).
4. **Hahn, C.**; Vakili M.; Walsh, K.; Hearin, A.; Hogg, D. W.; Campbell, D. *Approximate Bayesian Computation in Large Scale Structure: Constraining the Galaxy-Halo Connection* MNRAS, 469, 2791, *2017* (arXiv:1607.01782).
3. **Hahn, C.**; Scoccimarro, R.; Blanton, M.; Tinker, J.; Rodríguez-Torres, S. *The Effect of Fiber Collisions on the Galaxy Power Spectrum Multipole* MNRAS, 467, 1940, *2017* (arXiv:1609.01714).
2. **Hahn, C.**; Blanton, M.; Moustakas, J.; Coil, A.; Cool, R.; Eisenstein, D. *et al. PRIMUS: Effects of Galaxy Environment on the Quiescent Fraction at $z < 0.8$* ApJ, 806, 162, *2015* (arXiv:1412.7162).
1. **Hahn, C.**; Sellwood, J.; Pryor C. *Velocity-space substructure from nearby RAVE and SDSS stars* MNRAS, 418, 2459, *2011* (arXiv:1102.4626).

CONTRIBUTING AUTHOR

32. Li, J.; Melchior, P.; **Hahn, C.**; Huang, S. *PopSED: Population-Level Inference for Galaxy Properties from Broadband Photometry with Neural Density Estimation* AJ submitted *2023* (arXiv:2309.16958).
31. Modi, C.; Pandey, S.; Ho, M.; **Hahn, C.** *et al.* *Sensitivity Analysis of Simulation-Based Inference for Galaxy Clustering* MNRAS submitted *2023* (arXiv:2309.15071).
30. Chawak, C.; Villaescusa-Navarro, F.; *et al.* (incl. **Hahn, C.**) *Cosmology with multiple galaxies* submitted *2023* (arXiv:2309.12048).
29. Liang, Y.; Melchior, P.; **Hahn, C.** *et al.* *Outlier Detection in the DESI Bright Galaxy Survey* ApJL, 956, 6 *2023* (arXiv:2307.07664).
28. Thiele, L.; Massara, E.; Pisani, A.; **Hahn, C.** *et al.* *Neutrino mass constraint from an Implicit Likelihood Analysis of BOSS voids* ApJ submitted *2023* (arXiv:2307.07555).
27. Lovell, C. C.; *et al.* (incl. **Hahn, C.**) *A Hierarchy of Normalizing Flows for Modelling the Galaxy-Halo Relationship* submitted *2023* (arXiv:2307.06967).
26. Schlafly, E.; *et al.* (incl. **Hahn, C.**) *Survey Operations for the Dark Energy Spectroscopic Instrument* submitted *2023* (arXiv:2306.06309).
25. Prada, F.; *et al.* (incl. **Hahn, C.**) *The DESI One-Percent Survey: Modelling the clustering and halo occupation of all four DESI tracers with Uchuu* submitted *2023* (arXiv:2306.06315).
24. Rocher, A.; *et al.* (incl. **Hahn, C.**) *The DESI One-Percent survey: exploring the Halo Occupation Distribution of Emission Line Galaxies with AbacusSummit simulations* JCAP, 10, 016 *2023* (arXiv:2306.06319).
23. Rashkovetskyi, M.; *et al.* (incl. **Hahn, C.**) *Validation of semi-analytical, semi-empirical covariance matrices for two-point correlation function for Early DESI data* MNRAS, 524, 3894 *2023* (arXiv:2306.06320).
22. Echeverri, P.; *et al.* (incl. **Hahn, C.**) *Cosmology with one galaxy? – The ASTRID model and robustness* ApJ, 954, 125 *2023* (arXiv:2304.06084).
21. Melchior, P.; Yan, L.; **Hahn, C.**; Goulding, A. *Autoencoding Galaxy Spectra I: Architecture* AJ, 166, 74 *2023* (arXiv:2211.07890).
20. Giusarma, E.; *et al.* (incl. **Hahn, C.**) *Learning neutrino effects in Cosmology with Convolutional Neural Networks*, ApJ, 950, 70, *2023* (arXiv:1910.04255).
19. Lemos, P.; Cranmer, M.; Abidi, M.; **Hahn, C.**; *et al.* *Robust Simulation-Based Inference in Cosmology with Bayesian Neural Networks* Machine Learning: Science and Technology, 4, 01 *2023* (arXiv:2207.08435)
18. Darragh-Ford, E; *et al.* (incl. **Hahn, C.**) *Target Selection and Sample Characterization for the DESI LOW-Z Secondary Target Program* ApJ 954, 149 *2023* (arXiv:2212.07433).
17. Myers, A. D.; *et al.* (incl. **Hahn, C.**) *The Target Selection Pipeline for the Dark Energy Spectroscopic Instrument* AJ, 165, 50 *2023* (arXiv:2208.08518).
16. Villaescusa-Navarro, F.; *et al.* (incl. **Hahn, C.**) *The CAMELS project: public data release* ApJS, 265, 54 *2023* (arXiv:2201.01300).
15. Hou, J.; Moradinezhad Dizgah, A.; **Hahn, C.**; Massara, E. *Cosmological Information in Skew Spectra of Biased Tracers in Redshift Space* JCAP, 03, 045 *2023* (arXiv:2210.12743).
14. Lan, T.; *et al.* (incl. **Hahn, C.**) *The DESI Survey Validation: Results from Visual Inspection of Bright Galaxies, Luminous Red Galaxies, and Emission Line Galaxies* ApJ, 943, 68 *2023* (arXiv:2208.08516).

13. Massara, E.; Villaescusa-Navarro, F.; **Hahn, C.**; Abidi, M. M.;*et al.* *Cosmological Information in the Marked Power Spectrum of the Galaxy Field* ApJ, 951, 70 *2023* (arXiv:2206.01709).
12. Abareshi, J.; *et al.* (incl. **Hahn, C.**) *Overview of the Instrumentation for the Dark Energy Spectroscopic Instrument* AJ, 164, 207 *2022* (arXiv:2205.10939).
11. Eickenberg, M.; *et al.* (incl. **Hahn, C.**) *Wavelet Moments for Cosmological Parameter Estimation* ApJ submitted *2022* (arXiv:2204.07646).
10. Wang, Y.; *et al.* (incl. **Hahn, C.**) *Extracting high-order cosmological information in galaxy surveys with power spectra* Nat. Astron submitted *2022* (arXiv:2202.05248).
9. Friedrich, O.; Halder, A.; Boyle, A.; Uhlemann, C.; Britt, D; Codis, S; Gruen, D; **Hahn, C.** *The PDF perspective on the tracer-matter connection: Lagrangian bias and non-Poissonian shot noise* MNRAS, 510, 5069, *2022* (arXiv:2107.02300).
8. Dickey, C. M.; Starkenburg, T. K.; Geha, M.; **Hahn, C**; *et al.* *IQ Collaboratory II: The Quiescent Fraction of Isolated, Low Mass Galaxies Across Simulations and Observations* ApJ, 915, 53, *2021* (arXiv:2010.01132).
7. Ruiz-Macias, O. *et al.* (incl. **Hahn, C.**); *Characterising the target selection pipeline for the Dark Energy Spectroscopic Instrument Bright Galaxy Survey* MNRAS, 502, 4328, *2021* (arXiv:2007.14950).
6. Alsing, J.; Peiris, H.; Leja, J.; **Hahn, C.**; *et al.* SPECULATOR: Emulating Stellar Population Synthesis for Fast and Accurate Galaxy Spectra and Photometry ApJS, 249, 5, *2020* (arXiv:1911.1178).
5. Blanton, M. *et al.* (incl. **Hahn, C.**) *Sloan Digital Sky Survey IV: Mapping the Milky Way, Nearby Galaxies, and the Distant Universe* AJ, 154, 28, *2017* (arXiv:1703.00052).
4. Vakili, M. *et al.* (incl. **Hahn, C.**) *Accurate halo-galaxy mocks from automatic bias estimation and particle mesh gravity solvers* MNRAS, 472, 4144, *2017* (arXiv:1701.03765).
3. Rodríguez-Torres, S. *et al.* (incl. **Hahn, C.**) *Clustering of Quasars in the First Year of the SDSS-IV eBOSS survey: Interpretation and halo occupation distribution* MNRAS, 468, 728, *2017* (arXiv:1612.06918).
2. Zhai, Z.; Tinker, J.; **Hahn, C.** *et al.* *The Clustering of Luminous Red Galaxies at $z \sim 0.7$ from eBOSS and BOSS Data* ApJ, 848, 2, *2017* (arXiv:1607.05383).
1. Rodríguez-Torres, S. *et al.* (incl. **Hahn, C.**) *The clustering of galaxies in the SDSS-III Baryon Oscillation Spectroscopic Survey: modelling the clustering and halo occupation distribution of BOSS CMASS galaxies in the Final Data Release* MNRAS, 460, 1173, *2016* (arXiv:1509.06404).

PEER-REVIEWED CONFERENCE PAPERS

9. **Hahn, C.**; Melchior, P.; Villaescusa-Navarro, F.; Teyssier, R. *Cosmology with Galaxy Photometry Alone* ICML Machine Learning for Astrophysics Workshop *2023*
8. **Hahn, C.**; Lemos, P.; ; Regaldo, B.; Parker, L. H. *et al.* SimBIG*: Galaxy Clustering Beyond the Power Spectrum* ICML Machine Learning for Astrophysics Workshop *2023*
7. Lemos, P.; Parker, L. H.; **Hahn, C.**; Regaldo, B. *et al.* SimBIG*: Field-level simulation-based inference of large-scale structure* ICML Machine Learning for Astrophysics Workshop *2023*
6. Li, J.; Melchior, P.; **Hahn, C.**; Huang, S. *Population-Level Inference for Galaxy Properties from Broadband Photometry* ICML Machine Learning for Astrophysics Workshop *2023*
5. Lovell, C. *et al.* (incl. **Hahn, C.**) *A Hierarchy of Normalizing Flows for Modelling the Galaxy-Halo Relationship* ICML Machine Learning for Astrophysics Workshop *2023*
4. **Hahn, C.**; Abidi, M.; Eickenberg, M.; Ho, S.; Lemos, P. *et al.* *SIMBIG: Likelihood-Free Inference of Galaxy Clustering* ICML Machine Learning for Astrophysics Workshop *2022*

3. **Hahn, C.**; Melchior, P. *Accelerated Galaxy SED Modeling using Amortized Neural Posterior Estimation* ICML Machine Learning for Astrophysics Workshop *2022*
2. Lemos, P.; Cranmer, M.; Abidi, M.; **Hahn, C.**; *et al.* *Robust Simulation-Based Inference with Bayesian Neural Networks* ICML Machine Learning for Astrophysics Workshop *2022*
1. Melchior, P.; **Hahn, C.**; Liang, Y. *Autoencoding Galaxy Spectra* ICML Machine Learning for Astrophysics Workshop *2022*

WHITE PAPERS AND OTHERS

3. Greene, J.; *et al.* (incl. **Hahn, C.**) *The Prime Focus Spectrograph Galaxy Evolution Survey 2022* (arXiv:2206.14908).
2. Tollerud, E. *et al.* (incl. **Hahn, C.**) *Sustaining Community-Driven Software for Astronomy in the 2020s 2019*
1. Ferraro, S. *et al.* (incl. **Hahn, C.**) *Inflation and Dark Energy from spectroscopy at $z > 2$ 2019* (arXiv:1903.09208).

## SELECTED TALKS

(*: invited)

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| *Nuclear and Particle Theory Seminar, MIT | Oct. 2023 |
| *Cosmology Seminar, UT Austin | Oct. 2023 |
| *Physics Colloquium, University of Arizona | Oct. 2023 |
| *Astro Seminar, Tufts University | Sep. 2023 |
| *Seminar, NYC Office of the Mayor | Sep. 2023 |
| *Bahcall Lunch, Institute for Advanced Studies, Princeton | Sep. 2023 |
| *Seminar, Kavli IPMU, Tokyo | Sep. 2023 |
| *DESI Collaboration Meeting, Durham UK | Jul. 2023 |
| Cosmic Connections: ML × Astrophysics Symposium, Simons Foundation NYC | May 2023 |
| *We MUST Talk Seminar, Remote | Apr 2023 |
| *Tristate Cosmology Meeting, Flatiron Institute NYC | Mar 2023 |
| HSC PFS Rubin Meeting, Princeton University NJ | Mar 2023 |
| *Colloquium, Boston University MA | Feb 2023 |
| *Kavli Institute for Theoretical Physics Workshop, Flatiron Institute NYC | Feb 2023 |
| *Astrophysics Symposium, Yale University CT | Jan 2023 |
| *241$^{st}$ American Astronomical Society Meeting, Seattle | Jan 2023 |
| *DESI Collaboration Meeting, Mexico | Dec 2022 |
| *DESI Research Forum, Remote | Nov 2022 |
| **Euclid* Machine Learning Seminar, Remote | Oct 2022 |
| Learning the Universe, Flatiron Institute NYC | Sep 2022 |
| *Thursday Lunch Seminar, Flatiron Institute NYC | May 2022 |
| *LSST DESC Seminar | May 2022 |
| *DESI Research Forum | May 2022 |
| *Institute for Advance Studies, Princeton | Apr. 2022 |
| *NYU Astro Seminar, NYC | Apr. 2022 |
| APS 2022 meeting, NYC | Apr. 2022 |
| Large-Volume Spec Workshop, STScI, Remote | Mar. 2022 |
| Learn the Universe, Flatiron Institute NYC | Mar. 2022 |
| *DESI AI Seminar, Remote | Dec. 2021 |
| Tristate Cosmology Meeting, Flatiron Institute NYC | Nov. 2021 |
| Thunch, Princeton University | Nov. 2021 |

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| SpergelFest, Princeton University/Flatiron Institute NYC | Oct. 2021 |
| Learning the Universe, Flatiron Institute NYC | Aug. 2021 |
| COSMO21, University of Illinois, Remote | Aug. 2021 |
| Multi-Object Spectroscopy for Galaxy Evolution, STScI, Remote | May 2021 |
| ESO GALSPEC2021, Remote | Apr. 2021 |
| Galread Seminar, Princeton Unviersity | Mar. 2021 |
| *Astro/Cosmology Seminar, Kavli IPMU | Feb. 2021 |
| *Cosmology-Galaxy-IGM Seminar, UC Santa Cruz | Jan. 2021 |
| *Astro Seminar, University of Waterloo | Oct. 2020 |
| Bahcall Lunch, Institute for Advanced Studies | Sep. 2020 |
| Cosmology at Home, Remote | Aug. 2020 |
| Aspen Galaxy Quenching, Aspen CO | Jan. 2020 |
| *Cosmology Lunch Seminar, Princeton/Institute for Advanced Study | Dec. 2019 |
| Hernquist group meeting, Harvard Center for Astrophysics | Nov. 2019 |
| Galaxy Lunch, Yale University | Nov. 2019 |
| Morning Tea, Carnegie Observatories | Oct. 2019 |
| *Cosmology Seminar, KIPAC/SLAC/Stanford | Oct. 2019 |
| KICP Chicago | Oct. 2019 |
| CPAC seminar, Argonne National Lab | Oct. 2019 |
| Cosmic Controversies, KICP Chicago | Oct. 2019 |
| *DESI Commissioning and Survey Validation workshop, NOAO AZ | Sep. 2019 |
| DESI Collaboration meeting, Berkeley Lab | Jul. 2019 |
| Cosmology × Data, NYU CCPP | May 2019 |
| *Isolated and Quenched Galaxies Workshop, Flatiron Institute NYC | Dec. 2018 |
| DESI Collaboration Meeting, Tuscon AZ | May 2018 |
| Flatiron Institute NYC | Feb. 2018 |
| Isolated and Quenched Galaxies Workshop, Flatiron Institute NYC | Sep. 2017 |
| *CCAPP seminar, The Ohio State University | Feb. 2017 |
| *seminar, Argonne National Lab | Jan. 2017 |
| American Astronomical Society 229, Grapevine TX | Jan. 2017 |
| *RPM seminar, Berkeley Lab | Dec. 2016 |
| Yale University | Oct. 2016 |
| Seminar, Universidad Nacional de Colombia, Bogota COL | Jun. 2016 |
| Brownbag Lunch, NYU CCPP | Apr. 2016 |
| Multi-Object Spectroscopy in the Next Decade, Canary Islands ESP | Feb. 2015 |
| Evolving Galaxies in Evolving Environments, Bologna ITA | Sep. 2014 |

## PUBLIC SOFTWARE AND DATA

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|---|---|
| `SEDflow` | *python* package for accelerated Bayesian SED modeling of galaxy photometry using simulation-based inference with neural density estimators |
| `provabgs` | *python* package for joint SED modeling of galaxy photometry and spectroscopy using neural emulators |
| Molino | 75,000 mock galaxy catalogs, constructed from full $N$-body simulations, designed to quantify the total cosmological information content of 3D galaxy distributions |
| `pySpectrum` | *python* package for measuring galaxy powerspectrum and bispectrum using Fast Fourier Transforms |
| `starFS` | *python* package for identifying the star-forming sequence in galaxy populations using |

Gaussian Mixutre Models

## REFERENCES

**Prof. Peter Melchior**
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**Prof. David H. Weinberg**
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Lawrence Berkeley National Laboratory, Berkeley