# Biprateep Dey

*Curriculum Vitae*

*Department of Statistical Sciences,*
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## Employment

2024-present **Eric and Wendy Schmidt AI in Science Postdoctoral Fellow**, *Department of Statistical Sciences and Vector Institute for Artificial Intelligence*, University of Toronto, Toronto, Ontario, Canada

2024-present **CITA Postdoctoral Fellow**, *Canadian Institute for Theoretical Astrophysics (CITA)*, University of Toronto, Toronto, Ontario, Canada

2024-present **Dunlap Fellow**, *Dunlap Institute for Astronomy and Astrophysics*, University of Toronto, Toronto, Ontario, Canada

## Education

2024 **Ph.D. in Physics**, *Department of Physics and Astronomy, University of Pittsburgh*, Pittsburgh, Pennsylvania, USA
**Thesis Title:** Cosmic cartography: Photometric Redshifts for the Next-Generation of Sky Surveys
**Advisors:** Prof. Jeff Newman and Prof. Brett Andrews

2020 **M.S. in Physics**, *University of Pittsburgh*, Pittsburgh, Pennsylvania, USA

2018 **Integrated B.Sc.-M.Sc. in Physics**, *National Institute of Science Education and Research (NISER)*, Bhubaneswar, Odisha, India
**Thesis Title:** Constructing predictors for HI mass in galaxies
**Advisor:** Prof. Nishikanta Khandai

## Research Interests

**Photometric Redshifts of Galaxies; Machine Learning, Statistics, and Uncertainty Quantification for Astrophysics and Cosmology; Galaxy Formation and Evolution**

**Publications:** **6 lead author, 3 significant contributing author, and 49 contributing author** (list attached)

**Presentations:** **25 invited, 21 contributed** (list attached)

## Awards and Honors

2024 **Outstanding Dissertation Award**, American Physical Society Topical Group on Data Science (APS-GDS)

2023 **"Builder" of the Dark Energy Spectroscopic Instrument (DESI) Collaboration**, Builder status is awarded to DESI members in recognition of a long engagement and a significant contribution to the collaboration infrastructure and service work

2023 **American Physical Society Topical Group on Data Science IMPACT Award for Excellence in Graduate Research**

2022 **LSST Corporation Enabling Science Fellowship**, Funding to attend the 2022 Rubin Observatory's Project and Community Workshop

2022 - 23 **Andrew Mellon Predoctoral Fellowships**, Funding for year long research at the Univ. of Pittsburgh

2022 **Zaccheus Daniel Predoctoral Fellowship**, Funding for summer term research at the Univ. of Pittsburgh

2021 **PITT-PACC Fellowship**, Funding for fall term research at the Univ. of Pittsburgh

2017 **MITACS Globalink Research Fellowship**, Funding for summer research at the Univ. of Alberta

2014 - 2018 **Kishore Vaigyanik Protsahan Yojana (KVPY) Fellowship**, *Dept. of Science and Tech., Govt. of India*, Scholarship for undergraduate studies and research internships

2013 - 2014 **INSPIRE Fellowship**, *Dept. of Science and Tech., Govt. of India*, Scholarship for undergraduate studies

## Leadership & Service

**Invited Referee**

- Monthly Notices of the Royal Astronomical Society (MNRAS)
- Astronomy & Astrophysics (A&A)
- Neural Information Processing Systems (NeurIPS) Machine Learning and the Physical Sciences (2022, 2023, 2024)
- International Conference on Machine Learning (ICML) Synergy of Scientific and Machine Learning Modeling (2023)

2024 **Judge**, AAS 243 Chambliss Astronomy Achievement Student Awards

2023 **Member**, LSST-DESC Collaboration Council Nominating Committee

2023 - present **Full Member**, LSST Dark Energy Science Collaboration

2023 **Co-Chair**, DESI photo-$z$ Topical Group

2022 **Chair**, LSST-DESC Collaboration Council Nominating Committee

2022 - 2023 **Member**, DESI Committee for Early Career Scientists

2021 - 2022 **Chairperson**, DESI Committee for Early Career Scientists

2020 - 2022 **Member**, DESI Outreach Committee

2020 - 2021 **Coordinator**, Astrosnacks, Dept. of Physics and Astronomy, University of Pittsburgh
Organized student driven talk and tutorial series

2020 - 2021 **Secretary**, Executive Committee, Bengali Association of Pittsburgh

2019 - 2021 **Coordinator**, Astronomy on Tap, Pittsburgh

## Awarded Super-computing Time

2025 **Perlmutter Supercomputer at NERSC**, *Photometric Redshifts for LSST and Beyond*, **500 CPU Hours and 8000 GPU Hours**, PI: **B. Dey**, Co-I: J. Newman, B. Andrews

2024 **Perlmutter Supercomputer at NERSC**, *Photometric Redshifts for LSST and Beyond*, **1500 CPU Hours and 8000 GPU Hours**, PI: **B. Dey**, Co-I: J. Newman, B. Andrews

2023 **Perlmutter Supercomputer at NERSC**, *Photometric Redshifts for LSST*, **500 CPU Hours and 2800 GPU Hours**, PI: **B. Dey**, Co-I: J. Newman, B. Andrews

2022 **Neocortex (Cerebras Wafer Scale Engine) at Pittsburgh Supercomputing Center** , *Making the Largest Map of Our Universe*, **500 machine hours**, PI: **B. Dey**, Co-I: J. Newman, B. Andrews, J. Rajasegaran

## Awarded Telescope Time

2023 **Dark Energy Spectroscopic Instrument (DESI)**, *Testing ELG Selections for DESI-2*, **18k fiber hours**, PI: J. Newman, Co-I: **B. Dey** and others

2023 **Dark Energy Spectroscopic Instrument (DESI)**, *Four in one: A consolidated program for DESI-2 and DESI-1b science cases in the COSMOS field*, **5k fiber hours**, PI: **B. Dey**, Co-PI: A. Leauthaud, J. Newman, R. Wechsler, Y. Mao

2022 **Dark Energy Spectroscopic Instrument (DESI)**, *DESI-2 for Deep Spectroscopic Samples for LSST Photo-z's*, **6k fiber hours**, PI: **B. Dey**, Co-I: J. Newman, B. Andrews, R. Zhou, J. Myles, J. McCullough, D. Gruen, N. Weaverdyck

2022 **Hubble Space Telescope Cycle 30 SNAP Proposal**, *Post-starbursts from DESI: Timing quenching and morphological transformation at* $1 < z < 1.3$, **409 Orbits**, PI: D. Setton, Co-I: **B. Dey** and others

## Funding

2023 **Nancy Grace Roman Space Telescope Research and Support Participation Opportunities**, *Exploiting Deep Learning to Improve Roman Photometric Redshifts*, ∼**$219k**, PI: J. Newman, Co-I: **B. Dey** and others

2023 **Nancy Grace Roman Space Telescope Research and Support Participation Opportunities**, *A Statistical Framework for Optimizing Roman Spectroscopic Training Sets*, ∼**$219k**, PI: J. Newman, Co-I: **B. Dey** and others

2022 **Hubble Space Telescope Cycle 30 SNAP**, *Post-starbursts from DESI: Timing quenching and morphological transformation at* $1 < z < 1.3$, ∼**$203k**, PI: D. Setton, Co-I: **B. Dey** and others

2021 **2022 ACCelerate Creativity + Innovation Festival**, Secured funding (∼**$12K**) from the University of Pittsburgh and the Atlantic Coast Conference (ACC) to produce a museum exhibit on *Making the largest Maps of our Universe*, **PI: B. Dey**, Co-I: J. Newman

## Supervision and Mentorship

2023-Present **Isabelle Laing**, *Stellar Parameter Estimation with Deep Learning*, Undergraduate research project at University of Toronto
Co-supervised with Josh Speagle.

Fall 2024-Present **Skyler (Duo) Yang**, *Photometric Redshift Distributions for Weak Lensing Cosmology*, Undergraduate reading project at University of Toronto

Fall 2024-Present **Farnia Najafi-Shoushtari**, *Empirical Models of Galaxy-Halo Connection*, Undergraduate reading project at University of Toronto

2023-Present **Emma Moran**, *Assessing Photometric Redshifts in Local Regions of Color Space*, Undergraduate research project at University of Pittsburgh
Co-supervised with Brett Andrews and Jeff Newman.

2022 - 2023 **Graduate Student Mentor**, Mentor for 5 incoming students at the Dept. of Physics and Astronomy, University of Pittsburgh

2020 - 2021 **Graduate Student Mentor**, Mentor for 3 incoming students at the Dept. of Physics and Astronomy, University of Pittsburgh

## Teaching

April 2024 **Calibration of Uncertainty Estimates for Astronomical Analysis**, Presented tutorial at the summer 2024 LSST-ISSC Collaboration meeting

July 2023 **DESI Spectra Visual Inspection Training**, Presented tutorial at the summer 2023 DESI Collaboration meeting

Summer 2022 **AstroPGH Bootcamp**, Presented two lectures on Astropy

Summer 2021 **AstroPGH-TAMU Bootcamp**, Presented two lectures on introductory Numpy

Summer 2020 **AstroPGH Bootcamp**, Presented three lectures on introductory and advanced Numpy

Spring 2019 **Teaching Assistant**, *PHYS 0110: Introduction to Physics 1*, with Prof. Matteo Broccio and Brian Pardo at Univ. of Pittsburgh

Fall 2018 **Teaching Assistant**, *ASTRON0088: From Stonehenge to Hubble*, with Prof. Carles Badenes and Prof. Sandhya Rao at Univ. of Pittsburgh

## Software

*(List of software packages I am the primary developer of)*

- `Cal-PIT`, *Python package to produce, diagnose and recallibrate PDFs to ensure conditional coverage*
- `desigal`, *Python package providing standardized utilities to use DESI spectra for studies of galaxies*
- `spline_basis`, *Python package* `B-spline` *and* `I-spline` *basis functions to represent PDFs*

## Science Communication

7. *Cosmic Cartography: Making the Largest Maps of our Universe.* Allegheny Observatory Public Lecture, Pittsburgh, June 2024.
6. *Your Guide to the Zodiacs.* Astronomy on Tap, Space Bar, Pittsburgh, February 2024.
5. *Making the Largest Maps of Our Universe.* Produced an exhibit for the 2022 ACCelerate Creativity + Innovation Festival at the Smithsonian National Museum of American History, April 2022. Secured funding of ∼$10,000. Event attended by more than 10,000 visitors over 3 days.
4. *How Stars Helped to Build Human Civilizations.* Biophilia Pittsburgh at the Phipps Conservatory and Botanical Gardens, Pittsburgh, November 2020.
3. *Demystifying Research Internships Abroad: Mitacs Globalink Research Fellowship.* Student Development Council Talk Series, IISER Bhopal, September 2020.
2. *Mapping the Universe using Sky Surveys.* NISER Astronomy Club Alumni Talk, National Institute of Science Education and Research, August 2020.
1. *Tutor for DESI High: Enabling high school students to use data from DESI* at the 2020 Bay Area Science Festival, 2021 North Carolina Science Festival, 2021 Boston Science Festival, and DESI High@Nepal 2021.

## List of Publications

ADS profile with an up-to-date citation record can be found here.
*(5 lead author, 4 significant contributing author, and 49 contributing author, 1 in prep)*

### Lead/Significant Contributing Author

9. **Dey, B.**, Newman, J. A., DESI Collaboration et al., 2024, *in prep*, expected submission by December. 2024,
*DESI Deep Spectroscopy for Photometric Redshift Training and Calibration for LSST.*

8. **Dey, B.**, Zhao, B., Newman, J. A., et al., 2023, Submitted to Annals of Applied Statistics,
*Conditionally Calibrated Predictive Distributions by Probability-Probability Map:Application to Galaxy Redshift Estimation and Probabilistic Forecasting.*

7. Setton, D. J., **Dey, B.**, Khullar, G., et al., 2023, The Astrophysical Journal, 947, L31,
*DESI Survey Validation Spectra Reveal an Increasing Fraction of Recently Quenched Galaxies at* $z \sim 1$.

6. Zhou, R., **Dey, B.**, Newman, J. A., et al., 2023, The Astronomical Journal, 165, 58,
*Target Selection and Validation of DESI Luminous Red Galaxies.*

5. **Dey, B.**, Newman J. A., Andrews B. H., et al., 2022, Monthly Notices of the Royal Astronomical Society, 515, 5285,
*Photometric redshifts from SDSS images with an interpretable deep capsule network.*

4. Chen, T. Y., **Dey, B.***, Ghosh A., et al., 2022, Proceedings of the US Community Study on the Future of Particle Physics (Snowmass 2021).
*Interpretable Uncertainty Quantification in AI for HEP.*

3. **Dey, B.**, Newman, J.A., Andrews, B.H., et al., 2021, Fourth Workshop on Machine Learning and the Physical Sciences (NeurIPS 2021),
*Re-calibrating Photometric Redshift Probability Distributions Using Feature-space Regression.*

2. **Dey, B.**, Rosolowsky, E., Cao, Y., et al., 2019, Monthly Notices of the Royal Astronomical Society, 488, 1926,
*The EDGE-CALIFA survey: Exploring the star formation law through variable selection.*

1. Bhattacharjee, S., **Dey, B.**, Mohapatra, A. K., 2018, European Journal of Physics, 39, 035404,
*Study of geometric phase using classical coupled oscillators.*

* Corresponding author

### Contributing Author

49. DESI Collaboration, et al.[including **Dey, B.**], 2024, The Astronomical Journal, 168, 58,
*The Early Data Release of the Dark Energy Spectroscopic Instrument.*

48. Zhang, Y., et al.[including **Dey, B.**], 2024, arXiv e-prints, arXiv:2407.21257,
*DESI Massive Post-Starburst Galaxies at* $\mathbf{z \sim 1.2}$ *have compact structures and dense cores.*

47. Wu, X., et al.[including **Dey, B.**], 2024, arXiv e-prints, arXiv:2407.17809,
*Tracing the evolution of the cool gas in CGM and IGM environments through Mg II absorption from redshift z=0.75 to z=1.65 using DESI-Y1 data.*

46. Hadzhiyska, B., et al.[including **Dey, B.**], 2024, arXiv e-prints, arXiv:2407.07152,
*Evidence for large baryonic feedback at low and intermediate redshifts from kinematic Sunyaev-Zel'dovich observations with ACT and DESI photometric galaxies.*

45. Sailer, N., et al.[including **Dey, B.**], 2024, arXiv e-prints, arXiv:2407.04607,
*Cosmological constraints from the cross-correlation of DESI Luminous Red Galaxies with CMB lensing from Planck PR4 and ACT DR6.*

44. Koposov, S. E., et al.[including **Dey, B.**], 2024, Monthly Notices of the Royal Astronomical Society,
*DESI Early Data Release Milky Way Survey Value-Added Catalogue.*

43. Pinon, M., et al.[including **Dey, B.**], 2024, arXiv e-prints, arXiv:2406.04804,
*Mitigation of DESI fiber assignment incompleteness effect on two-point clustering with small angular scale truncated estimators.*

42. White, M., et al.[including **Dey, B.**], 2024, arXiv e-prints, arXiv:2406.01803,
*The clustering of Lyman Alpha Emitting galaxies at z=2-3.*

41. Yantovski-Barth, M. J., et al.[including **Dey, B.**], 2024, Monthly Notices of the Royal Astronomical Society, 531, 2285,
*The CluMPR galaxy cluster-finding algorithm and DESI legacy survey galaxy cluster catalogue.*

40. Khederlarian, A., et al.[including **Dey, B.**], 2024, Monthly Notices of the Royal Astronomical Society, 531, 1454,
*Emission line predictions for mock galaxy catalogues: a new differentiable and empirical mapping from DESI.*

39. Anand, A., et al.[including **Dey, B.**], 2024, arXiv e-prints, arXiv:2405.19288,
*Archetype-Based Redshift Estimation for the Dark Energy Spectroscopic Instrument Survey.*

38. Townsend, A., et al.[including **Dey, B.**], 2024, arXiv e-prints, arXiv:2405.18589,
*Candidate strongly-lensed Type Ia supernovae in the Zwicky Transient Facility archive.*

37. Krolewski, A., et al.[including **Dey, B.**], 2024, arXiv e-prints, arXiv:2405.17208,
*Impact and mitigation of spectroscopic systematics on DESI DR1 clustering measurements.*

36. Yu, J., et al.[including **Dey, B.**], 2024, arXiv e-prints, arXiv:2405.16657,
*ELG Spectroscopic Systematics Analysis of the DESI Data Release 1.*

35. Ross, A. J., et al.[including **Dey, B.**], 2024, arXiv e-prints, arXiv:2405.16593,
*The Construction of Large-scale Structure Catalogs for the Dark Energy Spectroscopic Instrument.*

34. Kong, H., et al.[including **Dey, B.**], 2024, arXiv e-prints, arXiv:2405.16299,
*Forward modeling fluctuations in the DESI LRGs target sample using image simulations.*

33. Karaçaylı, N. G., et al.[including **Dey, B.**], 2024, arXiv e-prints, arXiv:2405.14988,
*CMB lensing and Ly-$\alpha$ forest cross bispectrum from DESI's first-year quasar sample.*

32. Lodha, K., et al.[including **Dey, B.**], 2024, arXiv e-prints, arXiv:2405.13588,
*DESI 2024: Constraints on Physics-Focused Aspects of Dark Energy using DESI DR1 BAO Data.*

31. Calderon, R., et al.[including **Dey, B.**], 2024, arXiv e-prints, arXiv:2405.04216,
*DESI 2024: Reconstructing Dark Energy using Crossing Statistics with DESI DR1 BAO data.*

30. Soumagnac, M. T., et al.[including **Dey, B.**], 2024, arXiv e-prints, arXiv:2405.03857,
*The MOST Hosts Survey: spectroscopic observation of the host galaxies of 40,000 transients using DESI.*

29. Ramirez-Solano, S., et al.[including **Dey, B.**], 2024, arXiv e-prints, arXiv:2404.07268,
*Full Modeling and Parameter Compression Methods in configuration space for DESI 2024 and beyond.*

28. Ruhlmann-Kleider, V., et al.[including **Dey, B.**], 2024, arXiv e-prints, arXiv:2404.03569,
*High redshift LBGs from deep broadband imaging for future spectroscopic surveys.*

27. Garcia-Quintero, C., et al.[including **Dey, B.**], 2024, arXiv e-prints, arXiv:2404.03009,
*HOD-Dependent Systematics in Emission Line Galaxies for the DESI 2024 BAO analysis.*

26. Mena-Fernández, J., et al.[including **Dey, B.**], 2024, arXiv e-prints, arXiv:2404.03008,
*HOD-Dependent Systematics for Luminous Red Galaxies in the DESI 2024 BAO Analysis.*

25. DESI Collaboration, et al.[including **Dey, B.**], 2024, arXiv e-prints, arXiv:2404.03002,
*DESI 2024 VI: Cosmological Constraints from the Measurements of Baryon Acoustic Oscillations.*

24. DESI Collaboration, et al.[including **Dey, B.**], 2024, arXiv e-prints, arXiv:2404.03001,
*DESI 2024 IV: Baryon Acoustic Oscillations from the Lyman Alpha Forest.*

23. DESI Collaboration, et al.[including **Dey, B.**], 2024, arXiv e-prints, arXiv:2404.03000,
*DESI 2024 III: Baryon Acoustic Oscillations from Galaxies and Quasars.*

22. Brown, Z., et al.[including **Dey, B.**], 2024, arXiv e-prints, arXiv:2403.18789,
*Constraining primordial non-Gaussianity from the large scale structure two-point and three-point correlation functions.*

21. Lamman, C., et al.[including **Dey, B.**], 2024, Monthly Notices of the Royal Astronomical Society, 528, 6559,
*Redshift-dependent RSD bias from intrinsic alignment with DESI Year 1 spectra.*

20. DESI Collaboration, et al.[including **Dey, B.**], 2024, The Astronomical Journal, 167, 62,
*Validation of the Scientific Program for the Dark Energy Spectroscopic Instrument.*

19. Wang, Y., et al.[including **Dey, B.**], 2023, arXiv e-prints, arXiv:2312.17459,
*Measuring the conditional luminosity and stellar mass functions of galaxies by combining the DESI LS DR9, SV3 and Y1 data.*

18. Zhou, R., et al.[including **Dey, B.**], 2023, Journal of Cosmology and Astroparticle Physics, 2023, 097,
*DESI luminous red galaxy samples for cross-correlations.*

17. Moustakas, J., et al.[including **Dey, B.**], 2023, Astrophysics Source Code Library, ascl:2308.005,
*FastSpecFit: Fast spectral synthesis and emission-line fitting of DESI spectra.*

16. Han, J. J., et al.[including **Dey, B.**], 2023, arXiv e-prints, arXiv:2306.11784,
*NANCY: Next-generation All-sky Near-infrared Community surveY.*

15. Prada, F., et al.[including **Dey, B.**], 2023, arXiv e-prints, arXiv:2306.06315,
*The DESI One-Percent Survey: Modelling the clustering and halo occupation of all four DESI tracers with Uchuu.*

14. Hahn, C., et al.[including **Dey, B.**], 2023, The Astronomical Journal, 165, 253,
*The DESI Bright Galaxy Survey: Final Target Selection, Design, and Validation.*

13. Guy, J., et al.[including **Dey, B.**], 2023, The Astronomical Journal, 165, 144,
*The Spectroscopic Data Processing Pipeline for the Dark Energy Spectroscopic Instrument.*

12. Raichoor, A., et al.[including **Dey, B.**], 2023, The Astronomical Journal, 165, 126,
*Target Selection and Validation of DESI Emission Line Galaxies.*

11. Alexander, D. M., et al.[including **Dey, B.**], 2023, The Astronomical Journal, 165, 124,
*The DESI Survey Validation: Results from Visual Inspection of the Quasar Survey Spectra.*

10. Chaussidon, E., et al.[including **Dey, B.**], 2023, The Astrophysical Journal, 944, 107,
*Target Selection and Validation of DESI Quasars.*

9. Myers, A. D., et al.[including **Dey, B.**], 2023, The Astronomical Journal, 165, 50,
*The Target-selection Pipeline for the Dark Energy Spectroscopic Instrument.*

8. Myers, A. D., et al.[including **Dey, B.**], 2023, Astrophysics Source Code Library, ascl:2301.025,
*desitarget: Selecting DESI targets from photometric catalogs.*

7. Lan, T.-W., et al.[including **Dey, B.**], 2023, The Astrophysical Journal, 943, 68,
*The DESI Survey Validation: Results from Visual Inspection of Bright Galaxies, Luminous Red Galaxies, and Emission-line Galaxies.*

6. Silber, J. H., et al.[including **Dey, B.**], 2023, The Astronomical Journal, 165, 9,
*The Robotic Multiobject Focal Plane System of the Dark Energy Spectroscopic Instrument (DESI).*

5. DESI Collaboration, et al.[including **Dey, B.**], 2022, The Astronomical Journal, 164, 207,
*Overview of the Instrumentation for the Dark Energy Spectroscopic Instrument.*

4. Sand, K. R., et al.[including **Dey, B.**], 2022, The Astrophysical Journal, 932, 98,
*Multiband Detection of Repeating FRB 20180916B.*

3. Zhou, R., et al.[including **Dey, B.**], 2020, Research Notes of the American Astronomical Society, 4, 181,
*Preliminary Target Selection for the DESI Luminous Red Galaxy (LRG) Sample.*

2. Sand, K. R., et al.[including **Dey, B.**], 2020, The Astronomer's Telegram, 13781, 1,
*Low-frequency detection of FRB180916 with the uGMRT.*

1. Dutta, S., Khandai, N., Dey, B.[including **Dey, B.**], 2020, Monthly Notices of the Royal Astronomical Society, 494, 2664,
*The population of galaxies that contribute to the H I mass function.*

## List of Presentations

*(25 Invited and 21 Contributed Presentations)*

### Invited

25. *Photometric Redshifts for Next-Generation Sky Surveys.* TASTY talks, Department of Astronomy and Astrophysics, University of Toronto, Canada, November 2024.
24. *Photometric Redshifts for Next-Generation Sky Surveys.* Astrophysics Seminar, Université de Montréal, Canada, October 2024.
23. *Photometric Redshifts for Next-Generation Sky Surveys.* Cosmology Group Meeting, Perimeter Institute, Canada, October 2024.
22. *DESI Spectroscopy for Photo-z Training and Calibration.* Plenary Talk at Winter 2023 DESI Collaboration Meeting, Hawaii, USA, December 2023.
21. *Photometric Redshifts for Next-Generation Sky Surveys.* Cosmology X Data Science Meeting, Center for Computational Astrophysics, Flatiron Institute, USA, November 2023.
20. *Photometric Redshifts for Next-Generation Sky Surveys.* Yale Cosmology Seminar, Yale University, USA, November 2023.
19. *Photometric Redshifts for Next-Generation Sky Surveys.* Survey Science Meeting, Princeton University, USA, November 2023.
18. *Photometric Redshifts for Next-Generation Sky Surveys.* Astrolunch seminar, University of Pittsburgh, USA, October 2023.
17. *Photometric Redshifts for Next-Generation Sky Surveys.* CCAPP Seminar, The Ohio State University, USA, October 2023.
16. *Photometric Redshifts for Next-Generation Sky Surveys.* JPL Dark Sector Meeting, NASA Jet propulsion Laboratory, USA, September 2023.
15. *Photometric Redshifts for Next-Generation Sky Surveys.* Caltech/IPAC Lunch Seminar, Infrared Processing & Analysis Center (IPAC), Pasadena, USA, September 2023.
14. *The DESI Photometric Redshift Topical Group*, Plenary talk at the 2023 Summer DESI Collaboration Meeting. Durham University, Durham, UK July 2023.
13. *Photometric Redshifts using Interpretable Deep Capsule Networks.* Talk at the DESI@UCL symposium, University College London, London, UK, July 2023.
12. *Photometric Redshifts using Interpretable Deep Capsule Networks.* Tea Talk, Kavli Institute for Particle Astrophysics and Cosmology, Stanford University, USA, April 2023.
11. *Calibrated Predictive Distributions for Photometric Redshifts.* Building a physical understanding of galaxy evolution with data-driven astronomy, Kavli Institute for Theoretical Physics, USA, February 2023.
10. *Calibrated Predictive Distributions.* NSF AI Planning Institute for Data-Driven Discovery in Physics, Carnegie Mellon University, USA, September 2022.
9. *Photometric redshifts for next generation sky surveys.* STAtistical Methods for the Physical Sciences (STAMPS) meeting, Carnegie Mellon University, USA, February 2022.
8. *The Dark Energy Spectroscopic Instrument: One year and 13 million redshifts later.* Plenary talk at Summer 2022 LSST-DESC Collaboration meeting at Kavli Institute for Cosmological Physics, University of Chicago, Chicago, USA, August 2022.
7. *Photometric redshifts for next-generation sky surveys.* Talk at Astro-Data group meeting, Princeton University, USA, July 2022.

6. *Photometric redshifts for next-generation sky surveys.* FLASH Lunch talk, University of California, Santa Cruz, USA, June 2022.

5. *Beyond DESI: Making an even larger map of the Universe.* DESI Lunch, Lawrence Berkeley National Laboratory, USA, June 2022.

4. *Photometric Redshifts for Next Generation Sky Surveys.* STAtistical Methods for the Physical Sciences (STAMPS) meeting, Carnegie Mellon University, USA, February 2022.

3. *Photometric Redshifts using Interpretable Deep Capsule Networks.* Institute seminar, Inter-University Centre for Astronomy and Astrophysics (IUCAA), India, December 2021.

2. *Capsule Networks: An Astronomer's Perspective.* Break-out session on Deep Learning, Statistical Challenges in Modern Astronomy (SCMA) VII, June 2021.

1. *Reducing Photometric Redshift Outliers with Deep Learning.* STAtistical Methods for the Physical Sciences (STAMPS) meeting, Carnegie Mellon University, USA, April 2020.

## Contributed

21. *Uncertainty Quantification for the Physical Sciences.* Brown Bag Seminar, Dept. of Statistical Sciences, University of Toronto, Canada, September 2024.

20. *Calibrated predictive distributions for photometric redshifts*, Talk at STATSTRO 2024: The AIstronomy Revolution, Toronto, Canada, May 2024.

19. *Calibrated predictive distributions for photometric redshifts*, Talk at the Summer 2024 LSST-ISSC Collaboration Meeting, Boston, USA, April 2024.

18. *Photometric Redshifts for Next Generation of Sky Surveys*, Thesis Talk at the 243rd Meeting of the American Astronomical Society, New Orleans, USA, January 2023.

17. *DESI for photo-z Training and Calibration*, Talk at the 2023 Summer DESC Collaboration Meeting. SLAC National Accelerator Laboratory, USA, July 2023.

16. *Calibrated predictive distributions for photometric redshifts*, Talk at Statistical Challenges in Modern Astronomy (SCMA) VIII, Pennsylvania State University, State College, USA, June 2023.

15. *DESI Deep Spectroscopy for Photo-z Training and Calibration.* Talk at DESI-2/ Stage-5 Workshop, Napa, USA, March 2023.

14. *Stellar Masses using Random Forests.* Talk at DESI Collaboration Meeting, Cancun, Mexico, December 2022.

13. *Calibration of Individual Photometric Redshift Estimates.* Talk at Essential Cosmology for the Next Generation VIII (Cosmology on the Beach), Playa De Carmen, Mexico, November 2022.

12. *The Dark Energy Spectroscopic Instrument: One year and 13 million redshifts later.* Astrosnacks presentation, University of Pittsburgh, September 2022.

11. *Calibrated Probability Distributions for Photometric Redshifts.* Poster at Rubin Observatory Project and Community Workshop, Tucson, USA, August 2022.

10. *Calibrated Probability Distributions for Photometric Redshifts.* Poster and Talk at Summer 2022 LSST-DESC Collaboration meeting at Kavli Institute for Cosmological Physics, University of Chicago, Chicago, USA, August 2022.

9. *Calibrated Predictive Distributions for Photometric Redshifts.* Poster at ICML 2022 Workshop on Machine Learning for Astrophysics, Baltimore, USA, July, 2022.

8. *Recalibrating Probability Density Estimates Using Feature-Space Regression.* Refereed talk at the Symposium on Data Science and Statistics, Pittsburgh, USA, June 2022.

7. *Re-calibrating Photometric Redshift Probability Distributions Using Feature-space Regression.* Poster and Talk at the Fourth Workshop on Machine Learning and the Physical Sciences (NeurIPS 2021), December 2021.

6. *Interpretable Photometric Redshifts using Deep Capsule Networks.* Talk at the 2nd Symposium on Artificial Intelligence for Science, Industry, and Society (AISIS 2021), October 2021.

5. *Latent Variable Models: Principal Components.* Talk at AstroPGH-TAMU Bootcamp 2021.

4. *Interpretable Photometric Redshifts with a DeepCapsule Network.* Poster at Statistical Challenges in Modern Astronomy VII, June 2021.

3. *Mapping the Universe using Sky Surveys.* Astrosnacks presentation, University of Pittsburgh, July 2020.

2. *Ancillary Targets: Testing filler samples in Survey validation.* DESI Collaboration meeting, Ohio State University, December 2019.

1. *LRG & ELG Imaging systematic Trends* (with A. Raichoor). DESI virtual collaboration meeting, March 2020.

Last Updated: January 16, 2025