MING-FENG HO

 jibancat.github.io | ✉ mho026@ucr.edu | 🎓 Google Scholar

EDUCATION

- Ph.D. student in Physics & Astronomy, University of California, Riverside   *2018 - 2024 May (expected)*
  Research advisor: Prof. Simeon Bird
  Thesis: New directions to intergalactic medium and cosmology using Bayesian surrogate models
- M.S. in Astrophysics, National Taiwan University   *2016 - 2018*
- B.S. in Physics, National Taiwan University   *2010 - 2014*

RESEARCH INTERESTS

- **CGM/IGM**: IGM/CGM as a cosmological/astrophysics probe, gas in galaxy formation simulations.
- **Bayesian modeling**: Gaussian process, multi-fidelity, Bayesian model selection, hierarchical inference.
- **Quasar observations**: damped Lyα absorbers (DLA), quasar redshift estimation, continuum inference.
- **Black holes**: population inference of black hole binaries.

AWARDS AND GRANTS

1. NASA FINESST Fellowship   *2021 - 2024*
2. Anne Kernan Award (Outstanding Senior Graduate Student Researcher), UC Riverside   *2023*
3. Provost's Scholars Fellowship (honored), UC Riverside   *2021*
4. Benjamin C. Shen Award (Outstanding Junior Graduate Student Researcher), UC Riverside   *2021*
5. GSA Conference Travel Award, UC Riverside   *2019*
6. Student Thesis Award, Physics Society of Taiwan   *2019*
7. Dean's Fellowship, UC Riverside   *2018*
8. Laureate for Philosophical Treatise, National Taiwan University   *2012*

RESEARCH MENTORSHIP

Advisor for UCR/UCLA undergraduates advised by Prof. Simeon Bird

- Kevin Hong (co-advised with Sum Qezlou): Animating the evolution of universe using `Blender` [📺 Video] *2022*
- Ryan Tsaio: Automated detection of Lyman limit systems   *2023*

Research advisor for King's high school students

- Emma Shah (now UC Berkeley; co-advised with Phoebe R. Upton Sanderbeck): DLA spatial separation on the detection pipeline   *2020 - 2021*
- Emma Shah and Rafael Rosales: A better prior for QSO redshift estimation (☉ jibanCat/gpy_dla_detection, Gold medal in the county-level science fair)   *2021 - 2022*

Team Lead for Data Science Challenge, Lawrence Livermore National Laboratory

- Adhith Karthikeyan, Alex Chen, Matthew Lee: Deep learning for galaxy/asteroid   *2021*

PUBLICATION

Summary

- 11 refereed/in review publications (73 total citations; Google scholar 09/15/2023).

- 4 first-author publications (61 total citations).
- 3 second-author publications with major contributions.

First and second author

- *MF-Box: Multi-fidelity and multi-scale emulation for the matter power spectrum*
  Ming-Feng Ho, Simeon Bird, Martin A. Fernandez, Christian R. Shelton, *submitted to MNRAS.*
- *Machine Learning Uncovers the Universe's Hidden Gems: A Comprehensive Catalogue of CIV Absorption Lines in SDSS DR12*
  Reza Monadi, **Ming-Feng Ho**, Kathy L. Cooksey, Simeon Bird, *submitted to MNRAS.*
- *A Multi-Fidelity Emulator for the Lyman-α Forest Flux Power Spectrum*
  M.A. Fernandez, **Ming-Feng Ho**, Simeon Bird, *MNRAS, Dec., 2022.*
- *Multi-Fidelity Emulation for the Matter Power Spectrum using Gaussian Processes*
  Ming-Feng Ho, Simeon Bird, Christian R. Shelton, *MNRAS, Jan., 2022.*
- *Damped Lyman-alpha Absorbers from Sloan Digital Sky Survey DR16Q with Gaussian processes*
  Ming-Feng Ho, Simeon Bird, and Roman Garnett, *MNRAS, Jul., 2021.*
- *Automated measurement of quasar redshift with a Gaussian process*
  Leah Fauber, **Ming-Feng Ho**, Simeon Bird, Christian R. Shelton, Roman Garnett, Ishita Korde, *MNRAS, Sep., 2020.*
- *Detecting multiple DLAs per spectrum in SDSS DR12 with Gaussian processes*
  Ming-Feng Ho, Simeon Bird, and Roman Garnett, *MNRAS, Jun., 2020.*

Others

- *Cosmological Constraints from the eBOSS Lya Forest using the PRIYA Simulations*
  Martin Fernandez, Simeon Bird, **Ming-Feng Ho**, *submitted to JCAP.*
- *Disentangling the Dark Mass Spectrum with Photometric Microlensing Surveys*
  Scott E. Perkins, Peter McGill, Willian Dawson, Natasha Abrams, Casey Y. Lam, **Ming-Feng Ho**, Jessica Lu, Simeon Bird, Kerianne Pruett, Nathan Golovich, George Chapline, and James Barbieri, *submitted to A&A.*
- *PRIYA: A New Suite of Lyman-alpha Forest Simulations for Cosmology*
  Simeon Bird, Martin Fernandez, **Ming-Feng Ho**, Mahdi Qezlou, Reza Monadi, Yueying Ni, Nianyi Chen, Rupert Croft, Tiziana Di Matteo, *submitted to JCAP.*
- *AMiBA: Cluster Sunyaev-Zel'dovich Effect Observations with the Expanded 13-Element Array*
  K.-Y. Lin, et. al. (**M.-F. Ho** in co-authorship), *APJ, Oct., 2016.*

SCIENTIFIC PRESENTATIONS

Summary

- 20 talks, posters and presentations since 2019
- 6 remote talks, 8 in-person seminar talks, 1 poster, 5 conference talks

Selected Talks

- *Contributed Talk: Royal Astronomical Society 1D ML (topic: GP-DLA finder)* [▶ Video]   *Mar 2023*
- *Contributed Tutorial: KITP Galaxy ML Workshop (topic: GP emulator)*   *Feb 2023*
- *Invited Talk: KICP seminar (topic: MF emulator)*   *Jan 2023*
- *Contributed Talk: CCA's CAMELS Workshop (topic: MF emulator using Astrid)*   *Nov 2022*
- *Contributed Talk: Cosmology from home (topic: MF emulator)* [▶ Video]   *Jul 2022*
- *Contributed Talk: Cosmology from home (topic: GP-DLA finder)* [▶ Video]   *Sep 2021*

SERVICE

Selected service

- Referee for Physical Review D, Astrophysical Journal, and MNRAS *2021 - present*
- P&A PeER Mentorship (PAPER) Leader *Spring 2023 - present*
- P&A Student Seminar (PASS) Founder *Spring 2022 - Winter 2023*
- P&A Graduate Student Association Secretary *2021*
- UC Astronomy Osterbrock Sierra Conference Co-I *2021*

PUBLIC OUTREACH

1. UCR's Stargazing Series Presenter and Moderator (× many times) [▶ Video] *2020 - 2021*
2. UCR's Mercury Transit Presenter (hands-on demos) *2019*

WORKING EXPERIENCE

Research Assistant for Digital Humanities Taipei, Taiwan
- Text mining for digital humanities, working at Academia Sinica, Chinese literature and Philosophy *2018*

Magazine Editor/Freelance Writer Taipei, Taiwan
- Editing for Little Newton, and also writing literature, receiving the nation-wide Hakka literature award *2015*

Taiwanese Military Service Keelung, Taiwan
- Digitalize historical court records *2014 - 2015*

OTHER SKILLS

- Languages: Mandarin (native), English, Japanese (limited listening/reading), Taiwanese (limited listening)