MING-FENG HO

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EDUCATION

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

RESEARCH INTERESTS

- **Simulations**: cosmological hydrodynamical simulations, Lyα forest as a cosmological/astrophysics probe.
- **Bayesian modeling**: Gaussian process, multi-fidelity, Bayesian model selection, hierarchical inference.
- **Quasar observations**: damped Lyα (DLA) finder, redshift inference, continuum fitting.
- **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: Animating the evolution of universe using `Blender` [YouTube Video] *2022*
- Ryan Tsaio: Automated detection of Lyman limit systems *2023 - present*

Research advisor for King's high school students

- Emma Shah (now UC Berkeley): 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

- 9 refereed/in review publications (62 total citations).
- 4 first-author publications (54 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, *accepted to MNRAS, 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

· *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 posters, talks, 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)* [YouTube Video] — *March 2023*
· *Contributed Tutorial: KITP Galaxy ML Workshop (topic: GP emulator)* — *Feb 2023*
· *Invited Talk: KICP seminar (topic: MF emulator)* — *January 2023*
· *Contributed Talk: CCA's CAMELS Workshop (topic: MF emulator using Astrid)* — *Nov 2022*
· *Contributed Talk: Cosmology from home (topic: MF emulator)* [YouTube Video] — *July 2022*
· *Contributed Talk: Cosmology from home (topic: GP-DLA finder)* [YouTube Video] — *September 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) [YouTube 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)