

Tao Ji

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EDUCATION AND TRAINING

[01/09/2023 – Current] **Master of Philosophy (MPhil)**

The University of Hong Kong

City: Hong Kong |

[01/09/2019 – 01/07/2023] **Bachelor of Science (BSc)**

Peking University

City: Beijing | Country: China |

PROJECTS

[01/09/2023 – Current] **Modelling Energetic Output from MAD Super-Eddington Accreting Supermassive Black Holes**

Master Graduation Thesis:

Performed a series of 3D three-dimensional general relativistic radiation magnetohydrodynamical (GRRMHD) simulations and analyze different energy conversion efficiencies and outflow properties of super-Eddington accreting SMBH in MAD state. Compare our results with some recent observations and discuss the potential applications in future cosmological simulations. Will make further investigation.

[01/10/2022 – 01/08/2023] **Variable Accretion Onto A Growing Star**

Bachelor Graduation Thesis:

Used different methods (Lomb-Scargle, Structure Function, Wavelet Analysis) to investigate the periodic behavior of TW Hya with photometry data from TESS, ASAS-SN and AAVSO.

Used color-magnitude diagram, multiple Gaussian Fitting to gain a deeper understanding of variable accretion process of a young star and conduct simple simulation to illustrate the process.

[01/06/2021 – 01/09/2022] **Comparative Study of Slitless Spectra of Quasars and Emission-line Galaxies**

Undergraduate Research Training Program:

Designed an algorithm to investigate spectra contamination and used software Grizli to do spectra fitting, to get criteria for quasar identifications from slitless spectroscopy.

PUBLICATIONS

[2024] **Modelling Energetic Output from MAD Super-Eddington Accreting Supermassive Black Holes**

Reference: Tao Ji, Jane Lixin Dai, Tom Man Kwan

In Prep.

[2024] **Quantifying the mass and timescale of short bursts in variable accretion onto TW Hya**

Reference: Tao Ji, Gregory J. Herczeg

In Prep.

[2024] **Quasar identifications from the slitless spectra: a test from 3D-HST**

Reference: Yuxuan Pang, Xue-bing Wu, Yuming Fu, Rui Zhu, Tao Ji, Qinchun Ma, Xiaotong Feng submitted to APJ on Aug 26, 2024

[2023] **[Twenty-five Years of Accretion onto the Classical T Tauri Star TW Hya](#)**

Reference: Gregory J. Herczeg, Yuguang Chen, ..., Tao Ji, ..., 2023, ApJ, 965, 102

SKILLS

Programming

Python, Shell/Zsh, Git, HPC experience, basic ML

Softwares

Proficient in astronomical softwares like Grizli, ds9, topcat etc.

Languages

Chinese (mother tongue), English

CONFERENCES & SEMINARS

- [05/12/2024 – 10/12/2024] **2024 PKU International PhD Student Forum on the Frontiers of Modern Astronomy** Beijing, China
Will give a talk on my project Modelling Energetic Output from MAD Super-Eddington Accreting Supermassive Black Holes. Know more about the frontiers of modern astronomy.
- [02/09/2024 – 06/09/2024] **AstroAI Asian Network (A3 Net) Workshop** Osaka, Japan
Organized by CD3, Kavli IPMU, The University of Tokyo.
Lectures on artificial intelligence and machine learning methods (shallow ML, Deep ML, Generative Model) for Astro. Finished a hack project of using CNNs to infer the fundamental parameters of the Universe.
- [13/11/2023 – 18/11/2023] **Hong Kong Laureate Forum in Astronomy** Hong Kong
Seminars given by Shaw Prize Laureates in Astronomy. Exchange ideas with other young scientists
- [25/07/2022 – 29/07/2022] **Chinese Space Station Telescope (CSST) Galaxy Science Summer School** Beijing, China
Organized by Kavli Institute for Astronomy and Astrophysics (KIAA), Peking University
Lectures about photometry, image processing, and spectra analysis. Finished all the hands-on training and mastered basic skills of coming CSST related galaxy science research.

HONOURS AND AWARDS

- [01/09/2023] **Postgraduate Scholarship Awarding institution:** The University of Hong Kong
Fully funded for 2-year MPhil program, including HKD 18390 per month, sufficient to cover food, lodging, general living expenses and composition fees.
- [01/09/2022] **Peking University Scholarship Awarding institution:** Peking University
- [01/09/2022] **Excellent Student Cadre Awarding institution:** Peking University
- [01/09/2021] **PKU Scholarship in Physics Awarding institution:** School of Physics, PKU
- [01/09/2021] **PetroChina Scholarship Awarding institution:** PKU & China National Petroleum Corporation

OBSERVING

the Supernova Integral Field Spectrograph (SNIFS) on the University of Hawaii 88-inch telescope (UH88)

Hawaii, USA (Remote) several nights, Oct. 2023

Use VNC viewer software to control the telescope remotely and help with getting data for some sources.

TEACHING

- [02/09/2024 – 23/12/2024] **HKU PHYS3653**
Teaching Assistant: give tutorials, grade homework, foster communication with undergraduates

VOLUNTEERING

- [12/2022 – 02/2023] **Olympic Winter Games Beijing 2022** Beijing, China
- [01/07/2023 – 31/07/2023] **World University Games Summer 2021 Chengdu** Beijing, China