

XIAOSHENG ZHAO

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EDUCATION

Tsinghua University
PhD in Astronomy

Sep 2018 -

Wuhan University
BS in Physics

Sep 2014 - Jun 2018

RESEARCH INTERESTS

I study the 21cm cosmology with the help of artificial intelligence (AI). Currently I apply different statistical methods to maximally extract the information from future 21 cm signal. My research interests are connecting the cosmological simulations and observations, combining multi-modal information for astrophysical problem, as well as accelerating the automatic knowledge discovery using modern statistics and machine learning in the era of big data. I plan to develop accurate and flexible cosmological and astrophysical emulators, and the corresponding inference tools; combine multi-modal information (morphology, light curves, and spectra etc.) to understand the galaxy formation and evolution; and develop flexible “cosmology-aware” symbolic algorithm to automatically find better model of our universe.

AWARDS

AMD scholarship

2020 - 2021

National scholarship

2015 - 2016

MENTORING & TEACHING EXPERIENCE

Teaching Assistant in undergraduate *Physics* course.

Feb - Jun 2019

REFERENCES

Prof. Yi Mao, Tsinghua University

ymao@mail.tsinghua.edu.cn

TALKS & PRESENTATIONS

SAZERAC 21cm 2022

Mar 2022

Recorded talk: *Implicit Likelihood Inference of Reionization Parameters from the 21 cm Power Spectrum*

Virtual

SAZERAC SIP, learning the high-redshift universe

Feb 2022

Contributed talk: *Simulation Based Inference of Reionization Parameters From 3D Tomographic 21 cm Lightcone Images*

Virtual

SKA CD/EoR Science Telecon

July 2021

Contributed talk: *Simulation Based Inference of Reionization Parameters From 3D Tomographic 21 cm Images*

Virtual

HERA telecon

Jun 2021

Contributed talk: *Simulation Based Inference of Reionization Parameters From 3D Tomographic 21 cm Images* UC, Berkeley

‘Barefoot Reionization’: Exploring the First Billion Years of the Universe July 2019
Poster sparkler talk: *The 21-cm cosmology with 3D CNN* U of Melbourne

SERVICE

I organized the machine learning session in astronomy department. Mar 2021 - Mar 2022

I co-organized the joint machine learning session among DoA (Tsinghua), JBCA (Manchester) and SKAO. Oct 2021 - Mar 2022

SKILLS

Coding languages: Python, C, html

General: Data science and Machine learning application with Pandas, Scikit-learn, Tensorflow and Pytorch.

PUBLICATIONS

[Implicit Likelihood Inference of Reionization Parameters from the 21 cm Power Spectrum](#)

Xiaosheng Zhao; Yi Mao; Benjamin D. Wandelt
2022, ApJ, 933, 236

[Simulation-Based Inference of Reionization Parameters From 3D Tomographic 21 cm Lightcone Images.](#)

Xiaosheng Zhao; Yi Mao; Cheng Cheng ; Benjamin D. Wandelt
2022, ApJ, 926, 151

EXTRA

Project of *Big Data Ability Enhancement* Sep 2021 - July 2022
Courses: *e.g. big data system, big data analysis, big data application* Tsinghua University
(*WeChat big data challenge: multi-modal short-video classification*)

CSST summer school July 2022
Got certification of data processing practice Peking University