XIAOSHENG ZHAO

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+33 0779117664 ⬦ Paris, France

EDUCATION & EXPERIENCE

Institut d'Astrophysique de Paris (IAP), France.   Nov 2022 -
Visitor

Tsinghua University, China   Sep 2018 -
PhD in Astronomy

Wuhan University, China   Sep 2014 - Jun 2018
BS in Physics

RESEARCH INTERESTS

My research interests include implicit inference from 3D fields, generative modeling as an alternative to cosmological simulations, geometric deep learning, e.g. machine learning on the sphere, physics-informed machine learning, and automatic knowledge discovery and symbolic regression from the multi-modal information of the universe.

AWARDS

AMD scholarship	2020 - 2021
National scholarship	2015 - 2016

REFERENCES

Prof. Yi Mao, Tsinghua University	ymao@mail.tsinghua.edu.cn
Prof. Benjamin D. Wandelt, Sorbonne Université & Flatiron Institute	bwandelt@iap.fr
Prof. Yuan-Sen Ting,	
Australian National University & The Ohio State University	yuan-sen.ting@anu.edu.au

PUBLICATIONS

Can Diffusion Model Conditionally Generate Astrophysical Images?
Xiaosheng Zhao; Yuan-Sen Ting; Kangning Diao; Yi Mao
2023, MNRAS, 256, 2

3D ScatterNet: Inference from 21 cm Light-cones
Xiaosheng Zhao; Shifan Zuo; Yi Mao
2023, ICML 2023 Workshop on Machine Learning for Astrophysics

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

[Evaluating Summary Statistics with Mutual Information for Cosmological Inference.](#)
Ce Sui; **Xiaosheng Zhao**; Tao Jing; Yi Mao
2023, ICML 2023 Workshop on Machine Learning for Astrophysics

Submitted
[Information-Ordered Bottlenecks for Adaptive Semantic Compression.](#)
Matthew Ho; **Xiaosheng Zhao**; Benjamin D. Wandelt
2023, submitted to The International Conference on Learning Representations (ICLR) 2024.

In prep
SphinX: Spherical Convolutional Neural Networks in JAX.
Xiaosheng Zhao; Alex Cole; Benjamin D. Wandelt

SKILLS

Coding languages: {Python, Jax} (middle), {C, Shell, html&CSS}(Junior)
General: Data science and Machine learning application with Pandas, Scikit-learn, Tensorflow and Pytorch.

TALKS & PRESENTATIONS

Astro Coffee	Sept 2023
informal talk: *Can Diffusion Model Conditionally Generate Astrophysical Images?*	*IAS*
Understanding the epoch of reionization	Mar 2023
Contributed talk: *Implicit Likelihood Inference of Reionization Parameters from 21 cm Power Spectrum and solid harmonic wavelet scattering coefficients*	*Sexten, Italy*
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*

MENTORING & TEACHING EXPERIENCE

Teaching Assistant in undergraduate *Physics* course.	Feb - Jun 2019

SERVICE

I organized the machine learning session at DoA, Tsinghua.   Mar 2021 - Mar 2022

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

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*