

SHUNYUAN MAO

Email: shunyuanm@gmail.com GitHub: [smao-astro](https://github.com/smao-astro)

National Radio Astronomy Observatory
520 Edgemont Road, Charlottesville, VA 22903

EDUCATION

University of Victoria *January 2022 - August 2024*
Doctor of Philosophy in Astronomy
Department of Physics and Astronomy

University of Victoria *September 2019 - January 2022*
Master in Astronomy
Department of Physics and Astronomy

University of Science and Technology of China *September 2015 - June 2019*
Bachelor of Astronomy, Wang Shouguan Honors Program in Astronomy
Department of Astronomy

EMPLOYMENT

National Radio Astronomy Observatory *July 2026 - Present*
Cosmic AI Postdoctoral Fellow

Rice University *March 2025 - July 2026*
Postdoctoral researcher, Department of Physics and Astronomy
Affiliate, Ken Kennedy Institute for AI and Computing

Los Alamos National Laboratory *September 2024 - February 2025*
Postdoctoral researcher

PUBLICATIONS

Neural Networks as Surrogate Solvers for Time-Dependent Accretion Disk Dynamics
Shunyuan Mao, et al. *The Astrophysical Journal Letters*, 2025, 992, L20

Disk2Planet: A Robust and Automated Machine Learning Tool for Parameter Inference in Disk–Planet Systems
Shunyuan Mao, et al. *The Astrophysical Journal*, 2024, 976, 200

PPDONet: Deep Operator Networks for Fast Prediction of Steady-state Solutions in Disk–Planet Systems
Shunyuan Mao, et al. *The Astrophysical Journal Letters*, 2023, 950, L12

DRAGraces: A pipeline for the GRACES high-resolution spectrograph at Gemini
André-Nicolas Chené, Shunyuan Mao, et al. *The Astronomical Journal*, 2021, 161, 109

AWARDS

National Energy Research Scientific Computing Center DOE Mission Science Allocation Award *2026 - 2027*
Accelerating Fluid Dynamics Simulations: A Data-Free, Physics-Informed Deep Learning Framework for Solving Partial Differential Equations *20000 CPU node hours*

OPEN-SOURCE SOFTWARE

PPDONet: Deep Operator Networks for Fast Prediction of Solutions in Disk-Planet Systems

Disk2Planet: A Robust and Automated Machine Learning Tool for Parameter Inference in Disk–Planet Systems

fargo_utils: Python user interface for FARGO3D hydrodynamic simulations

PRESS RELEASES / MEDIA EXPOSURES

A Rapid Disk Predictor
AAS NOVA (Mao, et al. 2023)

October 2023

INVITED TALKS

ET Seminar
Shanghai Astronomical Observatory
Shanghai, China

November 2024

Crunch Machine Learning + X Seminars
Brown University
Providence, RI, United State

January 2024

Scientific Machine Learning Workshop
Banff International Research Station for Mathematical Innovation and Discovery (BIRS)
Banff, AB, Canada

June 2023

CONTRIBUTED CONFERENCE/WORKSHOP TALKS

Cosmic Horizons Conference
Charlottesville, Virginia, United States

July 2026

2026 AstroAI Workshop
Boston, Massachusetts, United States

June 2026

ML4Disks Workshop
University of Milan, Italy

April 2026

2025 Star and Planet Formation in the Southwest Conference
Austin, Texas, United States

December 2025

Open SkAI 2025
Chicago, Illinois, United States

September 2025

Cosmic Horizons Conference
Austin, Texas, United States

May 2025

Chinese Congress of Theoretical and Applied Mechanics
Chengdu, China

November 2022

The 13th National Conference on Fluid Mechanics
Harbin, China

August 2024

ACADEMIC INTEREST

AI for Astronomy, Radio Interferometry, Physics-Informed Neural Networks, Planet Formation