Xingzhuo Chen Email : chenxingzhuo@tamu.edu
https://geronimochen.github.io

Education

- **Bachelor of Physics** Sept 2015 – June 2019
  Top-Notch Innovative Talent Project, College of Physics
  Sichuan University, China, GPA: 3.66/4.00.
- **Dissertation Defense & Research** Sept 2018 – July 2019
  Chinese Center for Antarctic Astronomy
  Purple Mountain Observatory, China.
- **Ph.D Astronomy** August 2019 – July 2024
  Department of Physics and Astronomy
  Texas A & M University, USA.

Computer Skills

- **Programming Languages**: Python (including the deep learning framework pytorch and keras), R, Julia.
- **Astronomical Softwares**:
  - **AIAI-SN**: An artificial intelligence to determine the elemental abundance of type Ia supernovae based on TARDIS radiative transfer program. AIAI-SN can estimate the elemental abundances from carbon to nickel elements, a power-law density profile, and a series of simulated spectra, given an observational spectral time sequence. I have **led the development** of AIAI-SN.
  - **TARDIS**: A monte carlo radiative transfer program for supernova optical spectra simulation. I have **extensively used** TARDIS for radiative transfer calculation on type Ia supernovae, in order to predict the element abundance in type Ia supernovae with artificial intelligence.
  - **SFFT**: An image subtraction program to detect supernova candidates from the sky survey telescopes, using GPU to accelerate the computation. I have **participated in the development** of SFFT.
  - **SNAIL**: An artificial intelligence designed to predict the optical spectrum of type Ia supernovae. I have **participated in the development** of SNAIL.
  - **SEDONA**: A monte carlo radiative transfer program for supernova optical light curve and spectra simulation. I have **used** SEDONA for several 3-dimensional time dependent radiative transfer calculations with polarization.
- **Platforms**: TAMU HPRC (4.6 million CPU hours), NERSC Cori (50,000 CPU hours), NERSC Perlmutter (3,000 CPU hours).

Teaching

2020 – 2022 TAMU ASTR420 *Advanced Astrophysical Research*
Teaching Assistant with grading, office hour, telescope observation arrangement. 3 semesters.

2021 TAMU ASTR320 *Astrophysical Research*
Teaching Assistant with grading, office hour, program testing. 1 semester.

Talks & Outreach

2019 Aug	*Deep-Learning on Synthetic Ia Supernovae Spectra* TAMU Astronomy Symposium, USA.
2020 Aug	*Building an Observatory on Antarctica* Astronomy on Tap Bryan College Station, USA.
2020 Aug	*Constraining Type Ia supernova Delay Time With Spatially Resolved Star Formation Histories* TAMU Astronomy Symposium, USA.
2021 May	*Finding Supernovae in Big Data* 4th Annual Texas A&M Research Computing Symposium, USA.
2021 Aug	*Radiative Transfer Modelling in Physics Informed Neural Network* TAMU Astronomy Symposium, USA.
2021 Oct	*Using Physics-Informed Neural Network to Calculate Radiative Transfer Problems* TAMIDS SciML workshop, USA.
2022 Mar	*Constraining Type Ia supernova Delay Time With Spatially Resolved Star Formation Histories* Cook's Branch Workshop on Supernovae, USA.
2022 Aug	*Three Dimensional Radiative Transfer Calculation on Supernovae* TAMU Astronomy Symposium, USA.
2023 Mar	*Rest Frame Sampling Radiative Transfer* Cook's Branch Workshop on Supernovae, USA.

Peer-Reviewed Publications

- **Xingzhuo Chen**, Danqing Zhang, Xi Zhang, Yong Liu, Xueyan Li, Gang Xiang. *Synthesis and growth mechanism of Mn-doped nanodot embedded silica nanowires.* 2019, Physica B, 571, 10.
- **Xingzhuo Chen**, Lei Hu, Lifan Wang. *Artificial Intelligence-Assisted Inversion (AIAI) of Synthetic Type Ia Supernova Spectra.* 2020, ApJS, 250, 12.
- **Xingzhuo Chen**, Lei Hu, Lifan Wang. *Constraining Type Ia Supernova Delay Time with Spatially Resolved Star Formation Histories.* 2021, ApJ, 922, 15.
- Lei Hu, Lifan Wang, **Xingzhuo Chen**, Jiawen Yang. *Image Subtraction in Fourier Space.* 2022, ApJ, 936, 157.
- Lei Hu, **Xingzhuo Chen**, Lifan Wang. *Spectroscopic Studies of Type Ia Supernovae Using LSTM Neural Networks.* 2022, ApJ, 930, 70.
- Jia Lu, Lifan Wang, **Xingzhuo Chen**, David Rubin, Saul Perlmutter, Dietrich Baade, Jeremy Mould, Jozsef Vinko, Eniko Regos, Anton M. Koekmoer. *Constraints on Cosmological Parameters with a Sample of Type Ia Supernovae from JWST.* 2022, ApJ, 941, 71.

Publications In Preparation

- **Xingzhuo Chen**, Lifan Wang, Lei Hu, Peter J. Brown. *Artificial Intelligence Assisted Inversion (AIAI): Quantifying the Spectral Features of 56Ni of Type Ia Supernovae.* arxiv:2210.15892.