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EDUCATION

Tsinghua University — Beijing, China
B.S. in Physics — *2014.8 – 2018.7*
Cumulative GPA: **87.49/100**

RESEARCH EXPERIENCE

Tsinghua University
Department of Physics, Tsinghua Center for Astrophysics — Beijing, China
Research Assistant, Advisor: **Professor Yi Mao** — *2016.6 – Present*

Project: Redshift Space Distortion (RSD) of the 21-cm Background From The Epoch of Reionization

- Developed a method, τ-MMRRM, to correct for the RSD in the 21-cm brightness temperature in numerical simulations.
- Developed a C program to generate distorted 21-cm brightness temperature in redshift space, and a toolbox to analyze the statistics of observables, e.g. power spectrum, probability distribution function(PDF), etc. The code is available on my github repository (https://github.com/JiachuanXu/MMRRM_adv.git)
- Proposed the "extended quasi-linear scheme" to interpret the 21-cm power spectrum in redshift space; quantified to what extent we can recover the matter power spectrum from 21-cm power spectrum.

University of Arizona
Department of Astronomy — Tucson, AZ, U.S.A
Research Assistant, Advisor: **Professor Xiaohui Fan, Professor Zheng Cai** — *2018.1 – Present*

Project: Studying the Overdensity of Lyman Break Galaxies in Proto-cluster BOSS1441

- Reduced optical and infrared images within BOSS1441 field, which contains one of the most massive proto-clusters at z=2.32.
- Combining photometry in UViJHK bands to deduce photometric redshift, quantifying the overdensity of Lyman Break Galaxies in BOSS1441.
- Reduced Binospec multislit spectra within BOSS1441 field.

Publications in Preparation (First Author)

- **Jiachuan Xu**, Yi Mao, "Redshift Space Distortion of the 21-cm Background from the Epoch of Reionization II: Effect of Finite Optical Thickness", in preparation. Expected submission to MNRAS at March, 2019
- **Jiachuan Xu**, Yi Mao, "Redshift Space Distortion of the 21-cm Background from the Epoch of Reionization III: Understanding RSD Through Extended Quasi-linear Scheme", in preparation. Expected submission to MNRAS at March, 2019

Publications (Co-author)

- Kai Hoffmann, Yi Mao, **Jiachuan Xu**, Houjun Mo, Benjamin D. Wandelt, "Signatures of Cosmic Reionization on the 21cm 2- and 3-point Correlation Function I: Quadratic Bias Modeling", 2018, arXiv:1802.02578, submitted to MNRAS.
- F. Arrigoni Battaia, Chian-Chou Chen, M. Fumagalli, Zheng Cai, G. Calistro Rivera, **Jiachuan Xu**, I. Smail, J. X. Prochaska, Yujin Yang, C. De Breuck, "Overdensity of submillimeter galaxies around the z∼2.3 MAMMOTH-1 nebula", 2018, arXiv:1810.10140, submitted to Astronomy & Astrophysics.

Conference and Meeting

American Astronomy Society — Seattle, United States
223rd AAS Winter Meeting — *2019.1(Expected)*
- Give poster on "Redshift Space Distortion of the 21-cm Background from the Epoch of Reionization"

School On Cosmology, Fudan University — Shanghai, China
2017 Spring School On Cosmology: "Early Universe: Theory and Observations" — *2017.2*
- Accomplished courses on large-scale structure and early universe.

China Astronomical Society
The 19^{th} CAS Guoshoujing Symposium on Galaxies and Cosmology — *2016.6*
- Learned the frontiers in galaxies and cosmology.

2017 Annual Meeting — *2017.8*
- Learned the frontiers in cosmology, large-scale structure and galaxies formation.

SKILLS

Language Proficiency:
- Fluent in English
- TOEFL: 103(Reading 27, Listening 28, Speaking 22, Writing 26)

Programming & Data Reduction:
- Skilled: C, Python3, LaTeX
- Familiar: Mathematica, Fortran, IDL, C++
- Library & Software: OpenMP, FFTW, SExtractor, EAZY, LePhare...

COURSEWORK

- General Relativity 94
- Statistical Mechanics(1) 92
- Astrophysics 93
- Quantum Mechanics(1) 97
- Differential Geometry 90
- Advanced Observational Astrophysics 95
- Group Theory 95
- Nuclear and Particle Physics 91

HONORS & AWARDS

2017 Scholarship of Outstanding Social Work
2015 Scholarship of Outstanding Voluntary Public Service

SOCIAL SERVICES & Outreach

Team leader of Department of Physics Volunteer Association. — 2016.9 – 2017.9
- Initiated the voluntary activity "The Amazing Physics D.I.Y.": Volunteers in physics department guided kids to do interesting physics experiments.