Huangfei Xiao

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Education

- Stony Brook University (State University of New York at Stony Brook)   NY, USA
  Master of Art in Physics   Aug. 2021 - Present
- Jilin University (985-, 211-, "Double First-rate"- Project)   Jilin, China
  Bachelor of Science in Physics, GPA: 86.52/100.00   Sept. 2015 - Jul. 2019

Selected Awards

- The Scholarship for Academic Excellence, Jilin University   2016, 2017, 2018
- The First Prize of College Students' Innovative Research Training Plan Program, Jilin University   2019
- Honorable Mention in Mathematical Contest in Modeling (MCM) of USA   2017
- The Best Performance in the Physics Experimental Exploration Competition, Canton   2017

Technical Skills

- **Languages:** Python, C, C++, MATLAB, Fortran, LaTeX, HTML
- **Operating:** Linux, High-Performance Computing Cluster
- **Astronomical Tools:** CIAO, DS9, AIPS, PGPLOT, DIFMAP, KIVS
- **Literature & Databases:** ADS, Skyview, NED, VizieR

Research Experience

Graduate Research Assistant,   Feb. 2022 - current   **Supervisor:** Dr. Vivian Miranda

C.N. Yang Institute for Theoretical Physics, Stony Brook University, New York, United States

Project: Study Dark Energy Anisotropic Stress in the Universe

- Base on cosmology perturbation theory
- Adapt Boltzmann codes in CLASS in C and CAMB in FORTRAN for models of dark energy anisotropic stress under fluid description
- Constrain models using the latest large-scale structure and CMB data through Cocoa and Cobaya

Undergraduate Research Assistant,   Feb.2019 - Sept.2019   **Supervisors:** Dr. Wei Zhao, Dr. Tao An

Shanghai Astronomical Observatory, Chinese Academy of Sciences, Shanghai, China

Project: Study the jet and outflow of Seyfert 2 galaxy NGC3079 by Very Long Baseline Array (VLBA) observation with Very Long Baseline Interferometry (VLBI) technology

- VLBA data reduction for 5GHz-continuum of nuclear region ($< 10\ pc$) of NGC3079 in AIPS and DIFMAP
- Analysis of components' flux density and positional relation in Python
- Interpretations for still puzzling components: 1) jet interacts with nuclear ISM under different environments, 2) starburst occurs there.

Undergraduate Research Assistant,   Aug. 2018 - Oct. 2018   **Supervisor:** Dr. Virginia Kilborn

Centre for Astrophysics & Supercomputing, Swinburne University of Technology, Melbourne, Australia

Project: Find Neutral Hydrogen depletion (HI hole) in the center of spiral galaxies of Westerbork observations of neutral Hydrogen in Irregular and SPiral galaxies (WHISP)

- Estimated HI holes in the center of 257 galaxies of WHISP by viewing in KIVS software
- Used SAOImage ds9 and Python for angular-momentum-model fitting which conducts radius profile, as well as 3D-visualization for directly showing inner situation (with a HI hole or not) of galaxies
- Twenty-one galaxies (such as UGC09753, UGC09649 with proper position angles and sizes) have HI holes for further discussion of the formation and evolution of spiral galaxies

Undergraduate Research Assistant, Jan. 2018 **Supervisor:** Dr. Song Wang

National Astronomical Observatories, Chinese Academy of Sciences, Beijing, China

Project: Learn the high-energy astrophysics data reduction method (e.g. CIAO for Chandra Telescope)

- Chandra data with 4-dimensional (2 spatial, time, energy) handle in Chandra Interactive Analysis of Observations (CIAO) for calibration, image, digging estimable information
- In Linux, used together with ds9, python, ChIPS, by commands to download, reprocess, extract spectrum, detect source, plot data, model spectra, etc.

Undergraduate Research Assistant, Jul. 2016 **Supervisors:** Dr. Jifeng Liu, Dr. Yu Bai

National Astronomical Observatories, Chinese Academy of Sciences, Beijing, China

Project: Search Compact X-ray Binary candidates in the 2nd ROSAT all-sky survey catalogue (2RXS)

- Found X-ray sources from No.50000 to No.90000 objects in 2RXS by restriction on parameters
- Searched ligth-curves, optic counterparts and spectra of sifted X-ray sources and used multi-wavelength approach for recognizing and classifying them
- Twenty desirable sources have high-value as candidates for further analysis, such as investigation of intermediate-mass black holes, the dynamical interaction and accretion, etc.

Undergraduate Research Training, Oct.2016 -Aug.2017 **Supervisor:** Dr. Hongdong Li

The State Key Laboratory of Superhard Materials, Jilin University, Changchun, China

Project: Preparation of BDD film and application in electrochemical sensor for harmful environment hormone detecting

- Prepare the Boron Doped Diamond (BDD) Film forming gold nanopaticles on the surface as a sensor for detecting pernicious polychlorinated biphenyl-77 (PCB-77)
- The detection limit can be improved to a high accuracy at $3.2 \times 10^{-16}(mol/L)$ through using this electrochemical detecting sensor.
- Learn spectrum analysis of properties of superhard materials and electrochemical measurement method

Selected Course Project

- Stars - Investigate the GAIA data and explore stellar properties (e.g. make an HR diagram to study the current distribution of stellar masses)   Fall 2021
- Astrostatistics - Regression and curve fitting on Python (Fit a trinary system HD126614A data to a Keplerian orbit)   Fall 2021

Leadership

- Vice Chairman of the Student Association of Science and Technology of Jilin University   Oct.2017 - Oct.2018
- Director of Observational Department of Jilin University Astronomy Society   Sept.2016 - Jul.2017

Non-Academic Activities

- Honor online Volunteer in COVID-19 pandemic   2020
- Excellent Volunteer in National Universities Camp for Science   2017
- Excellent Volunteer of China Foundation for Poverty Alleviation   2016
- Organizer and Volunteer in Outreach activity for field astronomical observation   2016, 2017
- Third place in Jilin University Student Badminton Championship   2016

Posters

2019 Xiao, H. F., W. Zhao, T. An, Investigation of Seyfert 2 galaxy NGC 3079 with VLBI technology. East Asia SKA Science Workshop 2019. Shanghai,SH.

2019 Xiao, H. F., V. Kilborn, Is there an HI hole in the center of spiral galaxies. East Asia SKA Science Workshop 2019. Shanghai,SH.

Presentations

2022 Dark Energy in Cosmology, Physics Grad Seminar, Stony Brook University, NY

2019 Jet and outflow of Seyfert 2 galaxy NGC 3079, Undergraduate thesis defense, College of Physics, Jilin University, Changchun, JL

2017 Astronomy in X-rays, Cross-Strait Undergraduates' Technology-Culture Camp - 18th Fu Lan Physics Festival, Canton, GD

2017 Preparation of BDD film and application in electrochemical sensor for harmful environment hormone detection, Undergraduate research training program defense, Jilin University, Changchun, JL