

CONTACT	Personal Website: https://litingxiao.github.io Email: lxiao@caltech.edu LinkedIn: https://www.linkedin.com/in/litingxiao/
PROFESSIONAL SUMMARY	Analytically-driven Ph.D. Candidate in Physics with 8 years of quantitative research experience, focusing on algorithmic development and analysis pipeline implementation in Python. Highly skilled at understanding, devising, and deploying efficient streamline statistical techniques in working with large datasets with a holistic view.
EDUCATION	<p>California Institute of Technology (Caltech), Pasadena, CA <i>2016 – 2022</i> Ph.D. Candidate, Physics; M.S., Physics, 2020 (GPA: 4.1/4.0)</p> <ul style="list-style-type: none"> Graduate research assistant at the Laser Interferometer Gravitational-Wave Observatory (LIGO) at Caltech, advised by Prof. Alan J. Weinstein Minor: Computational Science and Engineering Relevant coursework: Probability Models; Statistical Inference; Bayesian Statistics; Learning Systems; Machine Learning & Data Mining <p>University of Virginia (UVA), Charlottesville, VA <i>2011 – 2015</i> B.A., High Distinction, Astronomy-Physics; B.A., Mathematics (GPA: 3.8/4.0)</p> <ul style="list-style-type: none"> Senior Theses: (1) Probing the Orbital Lifetime and Stability in Kepler Multi-planet Extrasolar Systems; (2) The Occurrence of Compact Groups of Galaxies Through Cosmic Time (<i>Journal Ref: ApJ (2019) 873 124</i>) Honors: Echols Scholar; Member of National Physics Honor Society – Sigma Pi Sigma; 2015 UVA International Studies Office Award for Academic Excellence; 2014 UVA Outstanding Undergraduate Physics Research Award; 2014 – 2015 and 2013 – 2014 UVA Physics Department Mitchell Scholarship <p>Joseph Fourier University, Grenoble, France <i>Jun – Jul 2012</i> Summer, Bachelor Summer Program – Physics Large Scale Facilities</p>
SKILLS	<ul style="list-style-type: none"> Computing: Python (NumPy, SciPy, pandas, scikit-learn, TensorFlow, PyTorch), MATLAB, Unix Shell, Condor, L^AT_EX, C, Java, SQL, JavaScript Languages: English (<i>full professional</i>), Mandarin Chinese (<i>native</i>)
PHD RESEARCH HIGHLIGHTS	<ul style="list-style-type: none"> Leading the development and optimization of an end-to-end data pipeline to map anisotropies in the Stochastic Gravitational-Wave (GW) Background model-independently in the pixel domain using multicore CPU Collaborated in expanding the search ability of the streamline GW detection pipeline PYCBC by 10%, operated the pipeline to analyze months of time-series data, and personally identified 2 GW events during LIGO–Virgo Observing Run 3 (O3) Characterized confident detections and potential triggers, integrated into an extended catalog of GW transients, and prepared open data release for the astronomy community Optimized the Bayesian inference module for GW science, BILBY, with a 2-fold to 1000-fold speedup in computing the prior distribution 2018 Summer LIGO Detector Fellowship: enhanced, tuned, and commissioned the LIGO Livingston detector towards O3 The Nobel Prize in Physics in 2017 was awarded to three LIGO founders: Rainer Weiss (MIT), Kip S. Thorne (Caltech), Barry C. Barish (Caltech)
ML INDEPENDENT PROJECTS	<ul style="list-style-type: none"> Shakespearean Sonnet Generator – “William-wanna-shake-pear”: Built and trained Recurrent Neural Networks (RNNs) and Hidden Markov Models (HMMs) to generate sonnets of Shakespeare’s writing style High Frequency Price Prediction: Engineered new features and built and trained a Deep Neural Network (DNN) to predict future price movements using high frequency market orders

-
- | | |
|--------------------------------|---|
| LEADERSHIP
EXPERIENCE | <ul style="list-style-type: none"> • Serving on the executive committee in the Caltech/JPL Association for GW Research, mainly organizing the seminar series • Volunteered as a session leader in 2020 GW Open Data Workshop • Co-mentored 3 students for 2019 Caltech LIGO summer undergraduate projects |
| PAST
RESEARCH
EXPERIENCE | <ul style="list-style-type: none"> • Sept 2015 – Jun 2016: Analyzed trigger efficiency of the Higgs Boson search in the Compact Muon Solenoid Experiment at the Large Hadron Collider at CERN
Research Assistant, Physik-Institut der Universität Zürich, Zürich, Switzerland • Jan – May 2015: Investigated the occurrence of “compact groups of galaxies” through cosmic time using the Millennium Simulation
Undergrad Research Assistant, UVA Dept. of Astronomy, Charlottesville, VA • Jun – Sept 2014: Evaluated the sensitivity of the GstLAL analysis pipeline searching for gravitational-waves from the coalescence of high-mass black hole binaries
Summer Undergrad Research Fellow, LIGO Laboratory at Caltech, Pasadena, CA • Aug 2013 – May 2014: Adapted an existing CubeSat balloon satellite for cosmic ray measurements and designed the software for data transmission to the ground
Science Investigator, NASA-UVA JefferSat Cosmic Ray Mission, Charlottesville, VA • Mar 2013 – Jan 2014: Devised a method of identifying upward-going muons for an indirect dark matter search in the NOνA Experiment
Undergrad Research Assistant, Fermilab, Batavia, IL |
| PUBLICATIONS | <ul style="list-style-type: none"> • 70+ full-author list publications in physics and astronomy • 8 short-author list publications in physics and astronomy |