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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><b>California Institute of Technology</b> (Caltech), Pasadena, CA <span style="float: right;"><i>2016 – 2022</i></span>  <b>Ph.D. Candidate, Physics</b>; M.S., Physics, 2020 (<b>GPA: 4.1/4.0</b>)</p> <ul style="list-style-type: none"> <li>Graduate research assistant at the Laser Interferometer Gravitational-Wave Observatory (LIGO) at Caltech, advised by Prof. Alan J. Weinstein</li> <li>Minor: Computational Science and Engineering</li> <li>Relevant coursework: Probability Models; Statistical Inference; Bayesian Statistics; Learning Systems; Machine Learning &amp; Data Mining</li> </ul> <p><b>University of Virginia</b> (UVA), Charlottesville, VA <span style="float: right;"><i>2011 – 2015</i></span>          B.A., High Distinction, Astronomy-Physics; B.A., Mathematics (<b>GPA: 3.8/4.0</b>)</p> <ul style="list-style-type: none"> <li>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>)</li> <li>Honors: <b>Echols Scholar</b>; Member of National Physics Honor Society – <b>Sigma Pi Sigma</b>; 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</li> </ul> <p><b>Joseph Fourier University</b>, Grenoble, France <span style="float: right;"><i>Jun – Jul 2012</i></span>          Summer, Bachelor Summer Program – Physics Large Scale Facilities</p>
SKILLS	<ul style="list-style-type: none"> <li>Computing: <b>Python</b> (NumPy, SciPy, pandas, scikit-learn, TensorFlow, PyTorch), MATLAB, Unix Shell, Condor, L<sup>A</sup>T<sub>E</sub>X, C, Java, SQL, JavaScript</li> <li>Languages: English (<i>full professional</i>), Mandarin Chinese (<i>native</i>)</li> </ul>
PHD RESEARCH HIGHLIGHTS	<ul style="list-style-type: none"> <li><b>Leading the development and optimization</b> of an <b>end-to-end</b> data pipeline to map anisotropies in the Stochastic Gravitational-Wave (GW) Background model-independently in the pixel domain using multicore CPU</li> <li>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)</li> <li>Characterized confident detections and potential triggers, integrated into an extended catalog of GW transients, and prepared open data release for the astronomy community</li> <li>Optimized the Bayesian inference module for GW science, BILBY, with a 2-fold to 1000-fold speedup in computing the prior distribution</li> <li>2018 Summer LIGO Detector Fellowship: enhanced, tuned, and commissioned the LIGO Livingston detector towards O3</li> <li><b>The Nobel Prize in Physics in 2017</b> was awarded to three LIGO founders: Rainer Weiss (MIT), Kip S. Thorne (Caltech), Barry C. Barish (Caltech)</li> </ul>
ML INDEPENDENT PROJECTS	<ul style="list-style-type: none"> <li><b>Shakespearean Sonnet Generator</b> – “William-wanna-shake-pear”: Built and trained Recurrent Neural Networks (RNNs) and Hidden Markov Models (HMMs) to generate sonnets of Shakespeare’s writing style</li> <li><b>High Frequency Price Prediction</b>: Engineered new features and built and trained a Deep Neural Network (DNN) to predict future price movements using high frequency market orders</li> </ul>

LEADERSHIP EXPERIENCE	<ul style="list-style-type: none"> <li>• Serving on the executive committee in the Caltech/JPL Association for GW Research, mainly organizing the seminar series</li> <li>• Volunteered as a session leader in 2020 GW Open Data Workshop</li> <li>• Co-mentored 3 students for 2019 Caltech LIGO summer undergraduate projects</li> </ul>
PAST RESEARCH EXPERIENCE	<ul style="list-style-type: none"> <li>• Sept 2015 – Jun 2016: Trigger Efficiency Analysis 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)</li> <li>• Jan – May 2015: The Occurrence of Compact Groups of Galaxies through Cosmic Time (Undergrad Research Assistant, UVA Dept. of Astronomy, Charlottesville, VA)</li> <li>• Jun – Sept 2014: Searching for Gravitational Waves from the Coalescence of High-mass Black Hole Binaries with the GstLAL Analysis Pipeline (Summer Undergrad Research Fellow, LIGO Laboratory at Caltech, Pasadena, CA)</li> <li>• Aug 2013 – May 2014: NASA-UVA JefferSat Cosmic Ray Mission (Science Investigator, UVA Dept. of Mechanical and Aerospace Engineering, Charlottesville, VA)</li> <li>• Mar 2013 – Jan 2014: Identification of Upward-going Muons for an Indirect Dark Matter Search in the NO<math>\nu</math>A Experiment (Undergrad Research Assistant, Fermilab, Batavia, IL)</li> </ul>
SELECTED PUBLICATIONS	<ol style="list-style-type: none"> <li>[1] A Model-independent Anisotropic Stochastic Gravitational-wave Background Search and Application to LIGO-Virgo’s First Three Observing Runs, in preparation, <i>L. Xiao, A. I. Renzini, A. J. Weinstein.</i></li> <li>[2] GWTC-2.1: Deep Extended Catalog of Compact Binary Coalescences Observed by LIGO and Virgo During the First Half of the Third Observing Run, arXiv:2108.01045, <i>LIGO Scientific Collaboration, Virgo Collaboration</i></li> <li>[3] Realtime Search for Compact Binary Mergers in Advanced LIGO and Virgo’s Third Observing Run Using PyCBC Live, arXiv: 2008.07494, <i>T. D. Canton, ..., L. Xiao.</i></li> <li>[4] Bayesian Inference for Compact Binary Coalescences with BILBY: Validation and application to the first LIGO–Virgo gravitational-wave transient catalogue, MNRAS Vol. 499, Iss. 3 (2020), <i>I. M. Romero-Shaw, ..., L. Xiao.</i></li> <li>[5] GWTC-1: A Gravitational-Wave Transient Catalog of Compact Binary Mergers Observed by LIGO and Virgo during the First and Second Observing Runs, Phys. Rev. X 9, 031040 (2019), <i>LIGO Scientific Collaboration, Virgo Collaboration.</i></li> <li>[6] The GstLAL Search Analysis Methods for Compact Binary Mergers in Advanced LIGO’s Second and Advanced Virgo’s First Observing Runs, arXiv:1901.08580, <i>S. Sachdev, ..., L. Xiao.</i></li> </ol>