ZACHARY STONE

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GitHub ◇ ORCID ◇ ADS Search
stone28@illinois.edu

RESEARCH INTERESTS

Black holes, compact objects, AGN, quasars, binary AGN, binary black holes, gravitational waves, multi-messenger astronomy, accretion disks, reverberation mapping, black hole evolution, black hole population analysis, neutron stars, time-domain astronomy, statistical methods, inversion algorithms, Gaussian processes, statistical modeling, astronomical surveys, big data, database creation/management, AGN variability

EDUCATION

Stony Brook University August 2017 - May 2021
B.S. in Astronomy
B.S. in Physics
Minor in Mathematics
Magna Cum Laude
Overall GPA: 3.92

University of Illinois at Urbana-Champaign August 2021 - Present
PhD. in Astronomy

PROFESSIONAL EXPERIENCE

Undergraduate Coursework August 2017 - May 2021
Student *Stony Brook University*

- Obtained time-series data using the telescope at the Mt. Stony Brook Observatory
- Obtained archival spectroscopic and time-series data from NED, performed spectroscopic analysis to obtain emission/absorption line measurements
- Seasoned in operating computer software used to control telescopes and CCD cameras

Condor Array Telescope November 2019 - May 2021
Advisor: Kenneth Lanzetta *Stony Brook University*

- Retrieved, analyzed, and displayed weather information from the location of The Condor Array Telescope using SQL and Python
- Corroborated in the programming of a website, allowing the public to view the sky through the telescope and display weather data using Python, HTML, and Java
- Created simulated observations given noise and telescope information
- Performed least-squares fitting for the point spread function (PSF) of a certain area of the sky, using conditions of the sky and the telescope on the night of observation
- Performed PSF analysis on a large number of stars obtained from Gaia and MAST data

Graduate PhD Research August 2021 - Present
Advisor: Yue Shen *UIUC*

- Analyzed the general stochastic variability of quasars using optical time-series data taken from astronomical surveys (SDSS, PanSTARRS, DES, DECam) in multiple bands
- Performed time-series analysis using Gaussian process and Markov Chain Monte Carlo techniques to parameterize variability
- Aided in developing a pipeline to obtain reliable AGN light curves from TESS data
- Aggregated time-series data from quasars across multiple bands using MAST and other databases in the field

TECHNICAL SKILLS

Computer Languages	Fortran, C++, Python, Mathematica, LaTeX, Bash
Protocols & APIs	XML, JSON
Operating Systems	Linux, Windows, MacOS
Software	Athena++, Astropy/Scipy/Numpy, SAO DS9

REFEREED PUBLICATIONS

Zachary Stone, Yue Shen, Colin J Burke, et al. 2022, *Optical variability of quasars with 20-yr photometric light curves*, MNRAS, 514, 164, doi: 10.1093/mnras/stac1259

PUBLIC TALKS / PRESENTATIONS

1. *The Condor Array Telescope*, Stony Brook University URECA Research Symposium (May 2020)
2. *Optical variability of quasars with 20-yr photometric light curves*, DES All-Collaboration Conference (December 2021)

AFFILIATIONS/MEMBERSHIPS

Phi Beta Kappa
Sigma Pi Sigma
Dark Energy Survey
UIUC Department of Astronomy