HUGH SHARP

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EDUCATION

2020 - present	**University of Connecticut,** Storrs, CT **PhD Student** in Physics **M.S.** in Physics **Advisor:** Dr. Jonathan R. Trump
2016 - 2020	**University of Texas A&M**, College Station, TX **B.S.** in Physics, **Minor** in Astrophysics **Advisor:** Dr. Jonelle Walsh

RESEARCH EXPERIENCE

2020-present	**Research on Accretion Disk Size Diversity** Worked with Dr. Trump, Assitant Professor at the University of Connecticut *Graduate* In many recent studies, measurements of supermassive black hole (SMBH) accretion disk sizes been shown to be inconsistent to the foundational model used to describe SMBH accretion disks by Shakura & Sunyaev in 1973 (known as the SS73 model). I work to understand what physical properties influence accretion disk geometry from an observational approach, investigating large scale surveys representing diverse populations. I also have been designed and carried out my own multi-band continuum reverberation mapping survey to characterize the accretion structure at the highest time resolution thus studied, amoungst the most diverse and holistic quasar demographic.
2018-2020	**Research on NGC 4203 Supermassive Black Hole Mass** Worked with Dr. Walsh, Assitant Professor at Texas A&M *Undergraduate* Worked on analysing the stellar kinematics as a function of distance from NGC 4203's galactic center using the penalized pixel fitting method (pPXF). Monte Carlo simulations were performed to test the robustness of the kinematics and their associated statistical uncertainties, and the results will be used in stellar-dynamical techniques to constrain NGC 4203's supermassive black hole mass.
2017	**Research at Munnerlyn Astronomical Instrumentation Lab** Worked with Dr. Marshall, Assistant Professor at Texas A&M *Undergraduate* Learned the basics of charge coupled device (CCD) detectors and put together a specification sheet of hundreds of CCD detectors on the market, to compare price points and features between models. Worked on the traveling photometric calibration system (TCal) project at the lab. This system was designed so that the calibration between telescopes may be more consistent by using a common mobile instrument.

AWARDS, FELLOWSHIPS, AND HONORS

2020	**Travel Grant**, provided by the Phillip and Doris Moses Ranch Fund.

PRESENTATIONS

2024 | **UCONN Astronomy Seminar**, Storrs, CT
"Continuum Lags: Broad-Line Contamination, or Something Else?" (Talk)

2023 | **2023 New England Regional Quasar and AGN Meeting**, Kingston, RI
"Exploring Accretion Disk Scale and Structure of SDSS-RM Targets" (Talk)

2023 | **SDSS Annual Meeting**, Flatiron Institute, NY
"Investigation of Continuum Lag Dependence on Broad-Line Contamination and Quasar Properties" (Poster)

2022 | **SDSS Annual Meeting**, Toronto, ON
"Quasar Accretion Diversity Population Study" (Lightning Talk)

2021 | **SDSS Annual Meeting**, Online
"Exploring Accretion Disk Size Through Diverse Quasar Properties" (Lightning Talk)

2020 | **235th American Astronomical Society Meeting**, Honolulu, HI
"Stellar Kinematics of NGC 4203" (Poster)

2017 | **7th Texas Astronomy Undergraduate Symposium**, Rice University, TX
"Mobile Spectrophotometric Calibration Instrument TCal" (Talk)

PUBLICATIONS

First Author:

Sharp, H. W., et al (in prep.), *The SDSS-V Black Hole Mapper Reverberation Mapping Project: Echo Mapping Accretion onto Supermassive Black Holes across Cosmic Time*

- Sharp, H. W., et al 2024, *The Sloan Digital Sky Survey Reverberation Mapping Project: Investigation of Continuum Lag Dependence on Broad-Line Contamination and Quasar Properties*

Co-Authorships:

- Fries, L. B., et al 2024, *The SDSS-V Black Hole Mapper Reverberation Mapping Project: A Kinematically Variable Broad-line Region and Consequences for the Masses of Luminous Quasars*

- Fries, L. B., et al 2023, *The SDSS-V Black Hole Mapper Reverberation Mapping Project: Unusual Broad-Line Variability in a Luminous Quasar*

AWARDED PROPOSALS (SELECT)

Awarded PI:

2024 | A Fundamental Test of Black Hole Masses: Multi-Scale Echo Mapping of Luminous Quasars
Las Cumbres Observatory, 110 hours

2023 | Echo Mapping Accretion and Emission of Hypervariable Quasars
Las Cumbres Observatory, 110 hours

Awarded Co-I:

2023	A Fundamental Test of Black Hole Masses: Ultraviolet Echo Mapping the Multi-Scale Broad Line Gas around a Luminous Quasar Hubble Cycle 29, 50 Orbits

OBSERVATION, DESIGN, AND DATA REDUCTION EXPERIENCE

July 2024	Kitt Peak, AZ (in person) ODI/WIYN 3.5 m telescope, 3 half nights
Spring 2024	Las Cumbres Observatory (northern hemisphere array, remote) Sinistro, 1m telescope, 110 hours
Fall 2023	Las Cumbres Observatory (northern & southern hemisphere array, remote) Sinistro, 1m telescope, 110 hours
2021-Spring	Las Cumbres Observatory Key Project (northern hemisphere array, remote) Sinistro, 1m telescope, 600 hours MuSCAT, 2m telescope, 45 hours

OUTREACH

2024	UCONN Solar Eclipse Event Co-Organizer
2022 & 2024	UCONN, Astro On Tap Presenter
2023	STARS Public Library Outreach
2016-2020	Texas A&M Physics Festival
2016-2020	Discover Explore and Enjoy Physics (DEEP)
2016-2020	Gameday Physics Outreach
2016-2020	Chemistry Open House

MENTORSHIP

Fall 2024-Present	**Undergraduate Research Mentorship** Sophie Kozak, University of Connecticut Modeling The Spectral Energy Distribution of Anomalous Accretion Disks
Spring 2023-Present	**Undergraduate Research Mentorship** David Menezes, University of Connecticut Testing The Feasibility of Broad-Line Reverberation Mapping Utilizing Photometry

TEACHING EXPERIENCE

2022-Present	**BRIDGE Physics Instructor of Record** 5-week summer program designed to uplift and prepare incoming engineering students from underrepresented backgrounds, as they begin their first semester of undergrad.
	Teaching Assistantship
Fall 2022 & Fall 2024	**PHYS 1401**, Intro Mechanics For Pre-Med students
Fall 2021-Spring 2022	**PHYS 1501**, Intro Mechanics For Engineers
Fall 2020-Spring 2021	**PHYS 1201Q**, Intro Mechanics (Lab-based curriculum)

SELECT PROGRAMMING AND TECHNICAL SKILLS

- Exceedingly proficient programming in Python, including large scale data manipulation, web based data visualization, regression, aperture photometry, Bayesian statistics, maximal likelihood modeling, Markov Chain Monte Carlo, Cross Correlation, and much more.

- Experienced in the planning and implementation of photometric observational design over the course of 850 hrs of Las Cumbres Observatory (LCO) observing, and proposal writing for the LCO 2023B semester.

- Experience with JAVA, HTML, C, Julia, SQL, Git, MatLab, IRAF, (etc. probably forgot to list some)