LINDSEY KWOK

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EDUCATION

Rutgers University, New Brunswick, NJ
Sep 2019 - Present
Ph.D. Physics & Astronomy: GPA: 3.9/4.0
Qualifier: "Spectral Synthesis Models of SN 2014ad using TARDIS"

California Institute of Technology, Pasadena, CA
Sep 2013 - June 2017
B.S. Physics: GPA: 3.5/4.0
Thesis: "iPTF16asu: A Luminous, Rapidly Evolving, and High-velocity Supernova"

RESEARCH EXPERIENCE

RUTGERS UNIVERISTY, New Brunswick, NJ **Aug 2019 – Present**
Graduate Research Assistant with Prof. Saurabh W. Jha

- Modeled broad, blended spectra of high-velocity supernova SN2014ad using radiative transfer code TARDIS
- Developed infrastructure on supercomputer to run TARDIS models over large grids of parameter space
- Reduced and calibrated spectra from South African Large Telescope (SALT) using standard IRAF techniques

INTERMEDIATE PALOMAR TRANSIENT FACTORY (iPTF), Pasadena, CA **Aug 2016 – June 2017**
Caltech Research Assistant with Prof. Mansi M. Kasliwal and Dr. Ragnhild Lunnan

- Analyzed photometry and spectroscopy of a luminous, rapidly-evolving, high-velocity supernova
- Weighed feasibility of ^{56}Ni decay, magnetar, gamma-ray burst afterglow, and shock breakout models

LASER INTERFEROMETER GRAVITATIONAL-WAVE OBSERVATORY (LIGO), Pasadena, CA **June – Aug 2015**
Summer Undergraduate Research Fellow (SURF) with Dr. Mark Scheel

- Ran numerical relativity simulations of high-spin black-hole binaries in "superkick" configurations
- Modeled orbital parameters by iteratively solving Einstein's equations as black hole orbits circularize

NASA JET PROPULSION LABORATORY (JPL), Pasadena, CA **July – Sep 2014**
Summer Undergraduate Research Fellow (SURF) with Dr. Karen Willacy

- Determined chemical composition of Titan's atmosphere with data from the Atacama Large Millimeter/submillimeter Array (ALMA); instituted framework for future analysis of similar data sets

AWARDS & PROPOSALS

National Science Foundation Graduate Research Fellowship Program (NSF GRFP) Honorable Mention **(2021)**

Co-Investigator of *James Webb Space Telescope (JWST* Cycle 1 GO Proposal 02072, *"See Through Supernovae: Nebular Spectroscopy of Exploding White Dwarfs"*, PI: Saurabh Jha **(2021)**

Co-Investigator of *Hubble Space Telescope (HST)* Cycle 29 GO Proposal 16683, *"Radioactive Stars: Bound Remnants from White Dwarf Supernovae"*, PI: Saurabh Jha **(2021)**

PUBLICATIONS

***Whitesides, L.** et al. (2017), *iPTF 16asu: A Luminous, Rapidly Evolving, and High-velocity Supernova*, Astrophys J, 851,2.

Dong, Y. and 36 coauthors, incl. **L. Kwok** (2021), *"Supernova 2018cuf: A Type IIP Supernova with a Slow Fall from Plateau"*, ApJ, 906, 56

Barna, B. and 40 coauthors, incl. **L. Kwok** (2021), *"SN 2019muj - a well-observed Type Iax supernova that bridges the luminosity gap of the class",* MNRAS, 501, 1078

Jha, S. and 13 co-investigators, incl. **L. Kwok** (2021), *"See Through Supernovae: Nebular Spectroscopy of Exploding White Dwarfs"*, JWST Proposal, Cycle 1, ID. #2072

(Poster) ***Whitesides**, L. et al. **(2017)**, *Fast and Furious: Analysis of the Luminous and Rapidly-Evolving Type Ic-BL Supernova iPTF16asu.* 229th AAS Meeting, Grapevine, TX.

*Whitesides is maiden name

TEACHING EXPERIENCE

RUTGERS UNIVERISTY, New Brunswick, NJ **Aug 2019 – Present**

Graduate Teaching Assistant with Prof. Geraldine Cochran & Prof. Saurabh W. Jha

- Instructed students in recitations for PHY 115/116 – Extended Analytical Physics, in-person & virtually
- Graded for PHY 341 – Introduction to Astrophysics, a calculus-based, upper-level undergraduate course

THE WESTMINSTER SCHOOLS, Atlanta, GA **Aug 2018 – June 2019**

Upper School Physics Teacher

- Taught Honors and Regular 9th grade Physics; Coached FIRST Robotics; Planned "Game Design" Course

PHILLIPS ACADEMY ANDOVER, Andover, MA **Aug 2017 – June 2018**

Instructor in Physics

- Taught PHY 400 - College Physics, an algebra-based course covering Mechanics and Electromagnetism
- Taught PHY 440 – Astronomy, a broad-scope introductory course with night-time observing sessions
- Mentored, counseled, and tutored students living in a high-stress, boarding school environment

MENTORING EXPERIENCE

GOOGLE SUMMER OF CODE, TARDIS COLLABORATION **May – Aug, 2020**

Co-Mentor

- Helped advise student on a project to improve TARDIS's GUI module for identification of spectral lines

SUMMER SCIENCE PROGRAM (SSP), Boulder, CO and Soccoro, NM **June – July, 2016/17**

Teaching Assistant and Residential Mentor

- Mentored students in a six-week residential research program to calculate orbital elements of a near earth asteroid from original observations; trained students in telescope and data analysis techniques

PHYSICS LABORATORY AT CALTECH (Physics 6), Pasadena, CA **Jan – Mar, 2016/17**

Undergraduate Teaching Assistant with Mr. Frank Rice and Dr. H. David Politzer

- Instructed and mentored students on instrument use and data collection in an intermediate physics laboratory course; taught methodology of experimentally confirming scientific theories

VOLUNTEER EXPERIENCE

LITERACY NEW JERSEY, Elizabeth, NJ **Sep 2019 – Sep 2020**

English as a Second Language (ESL) Tutor

- Planned and taught weekly ESL lessons for a class of 12 adult immigrants in local community seeking better life opportunities through improving their English skills
- Continued teaching weekly classes virtually via Zoom after COVID-19 restrictions began

NURTURE THRU NATURE at NEW BRUNSWICK MIDDLE SCHOOL, New Brunswick, NJ **Jan – Mar 2020**

Outreach Volunteer with Prof. Eric Gawiser

- Planned and participated in monthly physics demonstrations and explorations at after-school program for underprivileged students in local community
- Unfortunately cut short due to COVID-19, intend to participate again once program resumes in Fall 2021

SKILLS

Computational: Python, MatPlotLib, Jupyter Lab, Unix, Mathematica, LaTeX, AstroPy, IRAF/Pyraf, C/C++, SLURM, SAOImage DS9, Microsoft Office, SXS Spectral Einstein Code (SpEC), CASA, Ordinary & Partial Differential Equations

Technical: Observatory Operation, Telescope Imaging and Reduction (focus, bias, flats, darks, filters), The Sky X