

## Anowar J. Shajib

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### CONTACT INFORMATION

Department of Physics and Astronomy  
University of California, Los Angeles  
430 Portola Plaza, Box 951547  
Los Angeles, CA 90095 USA

*Office:* Knudsen Hall 3-145T  
*Phone:* (213) 271-7056  
*E-mail:* [ajshajib@astro.ucla.edu](mailto:ajshajib@astro.ucla.edu)  
*Web:* [www.astro.ucla.edu/~ajshajib](http://www.astro.ucla.edu/~ajshajib)

### RESEARCH INTERESTS

Gravitational Lensing, Observational Cosmology, Statistical Methods and Machine Learning

### EDUCATION

#### University of California, Los Angeles, USA

Ph.D. Candidate, Astronomy, March 2017 (expected graduation date: June 2020)

- Dissertation Topic: “Mapping the expansion history of the Universe with strong-lensing time-delays”
- Advisor: Prof. Tommaso Treu

M.S., Astronomy, June 2016

- Advisor: Prof. Edward L. Wright

#### The University of Tokyo, Japan

B.S., Physics, March 2014

### HONORS AND AWARDS

**Rodger Doxsey Travel Prize**, 235<sup>th</sup> American Astronomical Society Meeting, Hawaii, USA, 2020

**Dissertation Year Fellowship**, UCLA, 2019-2020

Graduate Student Travel Stipend, Munich Institute for Astro- and Particle Physics, 2018

**Graduate Division Fellowship**, UCLA, 2014-2015

**Full-tuition Undergraduate Scholarship** from Government of Japan, Ministry of Education, Culture, Sports, Science and Technology, 2009-2014

### PUBLICATION STATISTICS

15 total refereed/under-review papers. **4 first-author and 1 single-author** papers (4 refereed, 1 under-review). **10 co-authored** papers (7 refereed, 3 under-review).

### SEMINAR TALKS

1. FLASH Friday talk, University of California, Santa Cruz, California, USA, December 2019.
2. Science talk, Infrared Processing and Analysis Center, California Institute of Technology, USA, November 2019.
3. Astrophysics Seminar, Jet Propulsion Laboratory, California, USA, November 2019.
4. Cosmology seminar, Berkeley Center For Cosmological Physics, University of California, Berkeley, USA, November 2019.
5. Cosmology seminar, Kavli Institute for Particle Astrophysics and Cosmology, Stanford University, USA, November 2019 (**invited**).
6. Journal club seminar, Center for Astrophysics and Space Sciences, University of California, San Diego, USA, November 2019.
7. Astrophysics seminar, University of California, Irvine, USA, October 2019.
8. Thursday lunch seminar, Princeton University, USA, October 2019.
9. Galaxy lunch talk, Yale University, USA, October 2019.
10. Galaxies and Cosmology Seminar, Center for Astrophysics, Harvard & Smithsonian, USA, October 2019.

11. Galaxy journal club, Space Telescope Science Institute, USA, October 2019.
12. Particle Astrophysics Seminar, Fermilab, USA, October 2019.
13. Lunch talk, Carnegie Observatories, Pasadena, USA, September 2019.
14. Astronomy seminar. University of California, Riverside, USA, May 2019.
15. MPA Lensing Group Seminar, Munich, Germany, June 2018 (**invited**).

#### CONTRIBUTED TALKS

1. Dark Energy Survey meeting, University of Sussex, UK, November 2019.
2. Non-Standard Cosmology Probes, Aspen Center of Physics workshop, Colorado, USA, August 2019.
3. Tensions between the Early and the Late Universe. Kavli Institute for Theoretical Physics, University of California, Santa Barbara, USA, July 2019.
4. Keck Science Meeting. Caltech, USA, September 2018.
5. Extragalactic distance scale in the *GAIA* era, Munich Institute for Astro- and Particle Physics workshop. Germany, June 2018.
6. Shedding Light on the Dark Universe with Extremely Large Telescopes. UCLA, USA, April 2018.
7. Strong Lensing by Galaxies and Clusters. Aosta, Italy, June 2017.

#### MEDIA COVERAGE

1. Siegel, E., “Astronomically Rare ‘Double Lens’ Yields Best Single System Measurement Of Cosmic Expansion”, [Forbes](#), 2019.

#### POSTER PRESENTATION

1. Cosmic Controversies. Kavli Institute for Cosmological Physics, University of Chicago, USA, October 2019.
2. Tensions between the Early and the Late Universe. Kavli Institute for Theoretical Physics, University of California, Santa Barbara, USA, August 2019.

#### APPROVED OBSERVING PROPOSALS (CoI)


1. *Hubble Space Telescope* GO-15652 (2018). PI: Treu.  $H_0$ , the stellar initial mass function, and other dark matters from a large sample of quadruply imaged quasars.
2. 2-m Himalayan Chandra Telescope (2018). PI: Courbin. Photometric monitoring of the quadruply lensed quasar PS0J0147+4630.
3. Very Large Telescope, MUSE NFM Science Verification (2018, 103A). PI: Zanella. From cosmology to star-forming regions: two compelling cases for MUSE NFM.
4. Keck U053(2017A), U032(2017B), U011(2018A), U011(2018B), U029(2019A), U065(2019B). PI: Treu. Dark energy with gravitational time-delay: OSIRIS spectroscopy of lensing galaxies.

#### APPROVED COMPUTING PROPOSALS (Co-PI)

1. XSEDE Startup Allocation, 200,000 CPU hours (TG-AST190038, 2019). PI: Treu. Highly-detailed strong-gravitational lens modeling to measure the Hubble constant.

#### WORKSHOPS

1. Non-Standard Cosmology Probes, Aspen Center of Physics, Colorado, USA, August–September 2019.
2. TMT Early Career Initiative Workshop, Los Angeles, December 2018.
3. Extragalactic distance scale in the *GAIA* era, MIAPP, Germany, June–July 2018.
4. Mary Lea & C. Donald Shane Observational Astronomy Workshop, UCO/Lick Observatory, October 2014.

OBSERVING EXPERIENCE	OSIRIS, Keck I, 13.5 nights, NIRC2, Keck II, 3 nights, MOSFIRE, Keck I, 3 nights, Shane telescope PFCam, Lick Observatory, 0.5 nights, Nickel telescope imager, Lick Observatory, 0.5 nights.
DATA ANALYSIS EXPERIENCE	<i>Hubble Space Telescope</i> (WFC3), W. M. Keck Observatory (OSIRIS, NIRC2), Very Large Telescope (MUSE), <i>Wide-field Infrared Survey Explorer</i> , <i>Wilkinson Microwave Anisotropy Probe</i> , <i>Planck</i> , Sloan Digital Sky Survey.
SCIENTIFIC SOFTWARE DEVELOPMENT	Contributing developer for the lens-modeling software LENSTRONOMY  .
COMPUTER SKILLS	<b>Programming Languages:</b> Python, C, C++, PHP, SQL, JavaScript <b>Astronomy Software:</b> IRAF, PyRAF, SExtractor, DS9 <b>Other Software/Framework:</b> TensorFlow, Flask
COLLABORATION MEMBERSHIP	<ul style="list-style-type: none"> <li>• Co-PI, STRong-lensing Insights into Dark Energy Survey (STRIDES), an external collaboration of the Dark Energy Survey (DES)</li> <li>• Co-I, <math>H_0</math> Lenses in COSMOGRAIL's Wellspring (H0LiCOW)</li> </ul>
PROFESSIONAL SERVICE	<ul style="list-style-type: none"> <li>• Referee for MNRAS (Monthly Notices of the Royal Astronomical Society) and ApJ (The Astrophysical Journal, American Astronomical Society)</li> <li>• Graduate admission committee member (2019), Division of Astronomy, UCLA</li> </ul>
MENTORING	<ul style="list-style-type: none"> <li>• <b>Eden Molina:</b> UCLA undergraduate, completing a project to model doubly-imaged lensed quasars from NIRC2 imaging data. Mentored since Fall 2018.</li> <li>• <b>Vedant Sahu:</b> UCLA undergraduate, working on a project to apply machine learning techniques in modelling quadruply-lensed quasars. Mentored since Summer 2019.</li> </ul>
TEACHING	<p><b>University of California, Los Angeles, USA</b></p> <p><i>Guest Lecturer</i></p> <ul style="list-style-type: none"> <li>• Physics 127 - General Relativity (Spring 2015)</li> <li>• Astro 81 - Astronomy I: Stars and Nebulae (Winter 2016)</li> </ul> <p><i>Teaching Assistant</i></p> <ul style="list-style-type: none"> <li>• Astronomy 3 - Nature of Universe (Fall 2014)</li> <li>• Physics 1C - Electrodynamics, Optics and Special Relativity (Winter 2015)</li> <li>• Physics 127 - General Relativity (Spring 2015)</li> <li>• Physics 6C - Physics for Life Sciences Majors: Light, Fluids, Thermodynamics, Modern Physics (Fall 2015)</li> <li>• Astronomy 81 - Astrophysics I: Stars and Nebulae (Winter 2016)</li> <li>• Astronomy 140 - Stellar Systems and Cosmology (Spring 2016)</li> <li>• Physics 12 - Physics of Sustainable Energy (Winter 2017)</li> </ul>

## OUTREACH

**Cal-Bridge program**, hosted a workshop at UCLA for California State University undergraduates on Graduate admission preparation, March, 2019.

**Lecturer at Astronomy Live! summer workshop** for high school students, 2018.

**Astronomy Live!**, visited K-12 schools to perform various demos as part of the UCLA Astronomy outreach program.

**Exploring Your Universe**, performed various demos in UCLA's annual science festival, 2014-17.

**Star show**, UCLA Planetarium, 2014-2016.

**Public talk**, UCLA Planetarium, 2014.