

# COLIN J. BURKE

## EDUCATION

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### University of Illinois at Urbana–Champaign

*Expected  $\approx$  2023*

Ph.D. Astronomy

Advisor: TBD

Dissertation: TBD

### University of Illinois at Urbana–Champaign

*Expected  $\approx$  2020*

M.S. Astronomy

### Purdue University – West Lafayette

May 2018

B.S. Physics

Advisor: John R. Peterson

Minor in Astronomy

Certificate of learning beyond the classroom

## RESEARCH & PROFESSIONAL EXPERIENCE

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### Space Systems R&D Intern

Summer 2017 & 2018

*TASC/Engility Corporation*

- Developed physics-based computational models for systems engineering applications in communications and remote sensing satellites for US government customers.

### Undergraduate Research Assistant

2014 - 2018

*Department of Physics and Astronomy, Purdue University*

- Modeled James Webb Space Telescope’s Near-Infrared Camera (NIRCam) in photon-by-photon *ab initio* Monte Carlo code, *PhoSim*.
- Simulated NIRCam images for use with future in-orbit testing in collaboration with Dr. Eiichi Egami and Professor Marcia Rieke at the University of Arizona.
- Re-developed physics-based algorithm for diffraction-limited telescopes to achieve high-fidelity.
- Simulated the WIYN telescope’s One Degree Imager (see observing experience below).

## OBSERVING EXPERIENCE

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### WIYN 3.5-m Telescope

5 nights: 2017/2018

*National Optical Astronomy Observatory, Kitt Peak, AZ*

Co-Investigator, “Weak Lensing in Clusters of Galaxies with *PhoSim*” NOAO 2017B-0824.

- Observed clusters of galaxies with the “One Degree Imager” in targeted to study to experiment with short-exposures and planned Large Synoptic Survey Telescope (LSST) modeling techniques in preparation for LSST first light and to better understand weak-lensing systematics.
- Replicated setup in *PhoSim* to compare with observational data.

## AWARDS

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### **Richard W. King Award**

2016 - 2017

*Department of Physics and Astronomy, Purdue University*

- Recognizes the Department's outstanding physics junior and senior. Typically awarded for excellence in research.

### **Introductory Composition at Purdue: People's Choice Award**

2014

*Department of English, Purdue University*

- "The Social and Ecological Ramifications of Light Pollution." For exemplary writing in introductory English composition class.

## PUBLICATIONS

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Burke et al. in prep. *Photon-by-photon image simulations of the James Webb Space Telescope's Near-Infrared Camera*. SPIE Journal of Astronomical Telescopes and Instrumentation.

## OUTREACH

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Secured thousands of dollars in grant money for purchase and distribution of 10,000 solar eclipse glasses to underprivileged schools and libraries near Purdue's campus in 2017.

Participated in study abroad service learning trip in physics education in Nanjing, China.

Purdue Astronomy Club (Vice President 2016 - 2017).

Volunteer, Physics and Astronomy Outreach (2015 - 2018).