COLIN J. BURKE

PERSONAL

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EDUCATION

University of Illinois at Urbana-Champaign   *in progress*
Ph.D. Astronomy
Advisor: Professor Xin Liu

Purdue University, West Lafayette   May 2018
B.S. Physics
Minor in Astronomy
Certificate of learning beyond the classroom

RESEARCH & PROFESSIONAL EXPERIENCE

Graduate Research   December 2018 - Present
Department of Astronomy, University of Illinois at Urbana-Champaign

· Advisor: Professor Xin Liu
· Searching for largest uniform sample of intermediate mass black holes in Dark Energy Survey images.

R&D Intern, Space and Missions Systems   June 2018 - August 2018
Engility Corporation (currently SAIC)   June 2017 - August 2017

· Developed computational models and simulations for communications and remote sensing satellites for various US government customers.

Undergraduate Research Assistant   February 2014 - May 2018
Department of Physics and Astronomy, Purdue University

· Advisor: Professor John R. Peterson
· Developer of internal image simulation code, *PhoSim*, for LSST.
· Extended and modified *PhoSim* for use with JWST, which resulted in a modest contract for our group with the University of Arizona.

AWARDS

Illinois Graduate Survey Science Fellow   2019 - 2020
Center for Astrophysical Surveys
National Center for Supercomputing Applications & Department of Astronomy, University of Illinois at Urbana-Champaign

Teacher Ranked as Excellent   Spring 2019
University of Illinois at Urbana-Champaign

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.

REFEREED PUBLICATIONS

H. Guo, **C. J. Burke**, X. Liu, K. A. Phadke, K. Zhang, Y.-C. Chen, C. Lidman, Y. Shen, and DES Collaboration. "Dark Energy Survey Identification of a low-mass Active Galactic Nucleus at Redshift 0.82 from Optical Variability." MNRAS submitted.

C. J. Burke, V. F. Baldassare, X. Liu, R. J. Foley, Y. Shen, A. Palmese, G. Hengxiao, and DES Collaboration. "The curious case of PHL 293B: A long-lived transient in a blue compact dwarf galaxy" ApJ Letters accepted (2020).

F. J. Sánchez, C. W. Walter, H. Awan, J. Chiang, S. F. Daniel, E. Gawiser, T. Glanzman, D. P. Kirkby, R. Mandelbaum, A. Slosar, W. M. Wood-Vasey, Y. AlSayyad, **C. J. Burke**, S. W. Digel, M. Jarvis, T. Johnson, H. Kelly, S. Krughoff, R. H. Lupton, P. J. Marshall, J. R. Peterson, P. A. Price, G. Sembroski, B. Van Klaveren, M. P. Wiesner, B. Xin. "The LSST DESC Data Challenge 1: Generation and Analysis of Synthetic Images for Next Generation Surveys." MNRAS submitted.

C. J. Burke, P. D. Aleo, X. Liu, J. R. Peterson, G. H. Sembroski, Y.-C. Chen, Y.-Y. Lin. "Deblending and Classifying Astronomical Sources with Mask R-CNN Deep Learning." MNRAS 490, 3952 (2019).

C. J. Burke, J. R. Peterson, E. Egami, J. M. Leisenring, G. H. Sembroski, Marcia J. Rieke. "PhoSim-NIRCam: photon-by-photon image simulations of the James Webb Space Telescope's near-infrared camera." JATIS 5(3), 038002 (2019).

J. R. Peterson, E. Peng, **C. J. Burke**, G. Sembroski, J. Cheng. "Deformation of Optics for Photon Monte Carlo Simulations." ApJ. 873, 98 (2019).

OBSERVING PROPOSALS ACCEPTED

Blanco 4-meter Telescope: DECam   0.5 nights: 2019A
Cerro Tololo Inter-American Observatory, Chile

D. Thomas (PI), S. Kahn, K. L. Smith, R. Blum, Ž. Ivezić, **C. J. Burke**. "Probing Short Duration Stellar Variability with Star Trail Images of Four K2 Fields"

WIYN 3.5-meter Telescope: ODI   1 night: 2018B-0374
National Optical Astronomy Observatory, Kitt Peak, AZ

J. R. Peterson (PI), G. H Sembroski, **C. J. Burke**, K. Graves, M. Geckler. "Weak Lensing in Clusters of Galaxies with *PhoSim*"

WIYN 3.5-meter Telescope: ODI   5 nights: 2017B-0824
National Optical Astronomy Observatory, Kitt Peak, AZ

J. R. Peterson (PI), G. H Sembroski, E. Peng, **C. J. Burke**. "Weak Lensing in Clusters of Galaxies with *PhoSim*"

NON-REFEREED PUBLICATIONS & CONFERENCE PROCEEDINGS

J. Peterson, G. Sembroski, **C. Burke**, C. Remocaldo; A. Dutta, G. Jernigan. "PhoSim: A Comprehensive Observational Simulation Tool for Precision Astronomy." AAS Meeting Abstracts #223 (2019)

D. Thomas, S. M. Kahn, F. B. Bianco, Z. Ivezic, C. M. Raiteri, A. Possenti, J. R. Peterson, **C. J. Burke**, R. D. Blum, G. H. Jacoby, S. B. Howell, G. Madejski. "Unveiling the Rich and Diverse Universe of Subsecond Astrophysics through LSST Star Trails." LSST Cadence Optimization White Paper (2018)

TALKS

Selected Contributed Talk. "New Faces of Black Holes" conference, Joint Space-Science Institute. Annapolis, MD.

PROFESSIONAL SERVICE

Referee for *Astronomy & Astrophysics, Monthly Notices of the Royal Astronomical Society*.

TEACHING & OUTREACH

Teaching Assistant: ASTR 122: Stars and Galaxies (Spring 2019; Ranked as excellent teacher)

Teaching Assistant: ASTR 350: Big Bang, Black Holes, and the Universe (Fall 2018)

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

Co-taught middle school physics in joint Purdue–Jiangsu Second Normal University service learning trip to Nanjing, China (May 2017)

Purdue Astronomy Club (Vice President 2016 - 2017; Outreach Coordinator 2016 - 2017)

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