

# Bingjie Wang

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## Research interests

### Cosmology and extragalactic astronomy

Interstellar and circumgalactic media, outflow, starburst, galaxy evolution, reionization, 21-cm cosmology, the cosmic microwave background

## Education

- 2016 – 2021 **Johns Hopkins University**, Baltimore, MD  
Ph.D., Astrophysics, advisor: Prof. Timothy M. Heckman  
Thesis: Implications for the epoch of reionization in the local universe
- 2012 – 2016 **University of Pittsburgh**, Pittsburgh, PA  
*Magna Cum Laude*  
B.A., Philosophy  
B.Phil., Physics with honors, advisor: Prof. Arthur B. Kosowsky  
Thesis: Evaluating the standard model of cosmology in light of large-scale anomalies in the cosmic microwave background

## Professional Experience

- Exp. 2022 **The Pennsylvania State University**, University Park, PA  
Postdoctoral scholar, mentor: Prof. Joel Leja

## Honors and Awards

- 2020 Rodger Doxsey Prize, American Astronomical Society  
2019 First-prize poster, First Light at University of São Paulo  
2016 ΣΠΣ physics honors society initiate
- 2012 – 2016 Dean's honor list
- 2016 Julia Thompson award for excellence in scientific writing, University of Pittsburgh  
2015 Halliday award for excellence in undergraduate research, University of Pittsburgh  
2015 Thomas-Lain fund scholarship, University of Pittsburgh  
2014 Research Internship in Science & Engineering, Deutschen Akademischen Austauschdienstes  
2014 Emil Sanielevici undergraduate research scholarship, University of Pittsburgh

## Technical Skills

- Proficient Python, C, Git, L<sup>A</sup>T<sub>E</sub>X;  
Bayesian analysis, the Cosmic Linear Anisotropy Solving System (CLASS) & modifications, HEALPix, HST UV spectroscopic & imaging analyses, high-performance computing, MCMC, PolSpice.
- Working knowledge Java, SQL, Fortran90, Bash/shell, Mathematica, HTML;  
21cmFAST, Radiation Scattering in Astrophysical Simulations (RASCAS), machine learning.

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## Refereed Publications

Total citations: 144; h-index: 7 (ADS, 11/01/21)

[Click here to see all papers in ADS](#); each title below contains an individual link.

- Primary- [1] The Low-redshift Lyman-continuum Survey: [S II] deficiency and the leakage of ionizing  
author radiation,  
**B. Wang**, T. Heckman, and the survey collaboration, ApJ 916, 3 (2021)  
– featured in **AAS Journal Author Series**
- [2] A systematic study of galactic outflows via fluorescence emission: implications for their  
size and structure,  
**B. Wang**, T. Heckman, G. Zhu, and C. Norman, ApJ 894, 149 (2020)  
– featured in **AAS NOVA Research Highlights**
- [3] A new technique for finding galaxies leaking Lyman-continuum radiation: [S II] deficiency,  
**B. Wang**, T. Heckman, C. Leitherer, et al., ApJ 885, 57 (2019)
- [4] A projected estimate of the reionization optical depth using the CLASS experiment's  
sample variance limited E-mode measurement,  
D. Watts, **B. Wang**, and the CLASS collaboration, ApJ 863, 121 (2018)
- [5] Microwave background correlations from dipole anisotropy modulation,  
S. Aiola, **B. Wang**, A. Kosowsky, et al., PRD 92 (6), 063008 (2015)
- [6] Gaussian approximation of peak values in the integrated Sachs-Wolfe effect,  
S. Aiola, A. Kosowsky, and **B. Wang**, PRD 91 (4), 043510 (2015)
- Others [7] The Baltimore Oriole's Nest: cool winds from the inner and outer parts of a star-forming  
galaxy at  $z = 1.3$ ,  
W. Wang, et al. (including B. Wang), arXiv:2109.12133 (2021)
- [8] On-sky performance of the CLASS Q-band telescope,  
J. Appel, et al. (including B. Wang), ApJ 876, 126 (2019)
- [9] Fermi-LAT counterparts of IceCube neutrinos above 100 TeV,  
F. Krauß, et al. (including B. Wang), A&A 620, A174 (2018)

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## Presentations

- 03/12/21 Invited talk, STARS at Arizona State University,  
"Star-forming galaxies: ionizing-photon escape and outflow scale"
- 01/12/21 Dissertation talk, 237<sup>th</sup> Meeting of the American Astronomical Society,  
"Implications for the epoch of reionization in the local universe"
- 10/29/20 Department lunch talk, University of California at Berkeley,  
"Implications for the epoch of reionization in the local universe"
- 02/24/20 CAS wine & cheese, Johns Hopkins University,  
"A systematic study of galactic outflows via fluorescence emission: implications for their  
size and structure"
- 08/06/19 First light, University of São Paulo, Brazil,  
"A new technique for finding galaxies leaking Lyman-continuum radiation: [S II] deficiency"
- 10/22/18 CAS wine & cheese, Johns Hopkins University,  
"Modeling the global 21-cm signal"
- 08/06/15 Undergraduate summer research, Princeton University,  
"Filtering the microwave background temperature through correlation with polarization"

- 02/25/15 Annual Sanielevici lecture, University of Pittsburgh,  
"Re-examining dark energy through large-scale structures of the universe"
- 09/12/14 Workshop on large-scale anomalies, Case Western Reserve University,  
"Gaussian approximation of peak values in the integrated Sachs-Wolfe effect."
- 07/05/14 DAAD RISE scholarship holder meeting, Heidelberg, Germany,  
"Black holes as possible sources of high-energy neutrinos"
- 04/03/14 Workshop on astrophysics and cosmology, Pennsylvania State University,  
"ΛCDM estimates on the stacked late-ISW signal"

## Community Service

Reviewer for The Astrophysical Journal  
Volunteer at Physics Fair, Baltimore, MD

## Teaching Experience

- 09/16 - 12/18 Graduate teaching assistant; courses taught:
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|--|-------------|
| Graduate radiative astrophysics; graduate astrophysical dynamics         | Fall 2018   |
| Graduate radiative astrophysics; cosmology                               | Fall 2017   |
| General physics for biological science majors II; general physics lab II | Spring 2017 |
| General physics for physical science majors II; general physics lab I    | Fall 2016   |

## Summer Schools

- 07/08 - First light: stars, galaxies and black holes in the epoch of reionization,  
08/07/19 University of São Paulo, Brazil.
- 07/03 - 28/17 Particles, strings and cosmology, University of Hamburg, Germany.

## References

Timothy M. Heckman, Ph.D.  
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Arthur B. Kosowsky, Ph.D.  
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