Christina Willecke Lindberg

Astronomy Ph.D. Candidate

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RESEARCH INTERESTS

HST ∘ JWST ∘ Local galaxies ∘ Interstellar Medium ∘ Stellar populations ∘ Data science ∘ Community leadership

EDUCATION

Ph.D. Candidate in Astronomy 2019 - Present

Johns Hopkins University (JHU)

Thesis Topic: Structure and Dynamics of the Interstellar Medium in Local Group Galaxies

Research Advisor: Dr. Claire Murray (STScI)

B.S. in Comprehensive Physics and Astronomy (Honors) 2015 - 2018

University of Washington (UW)

SOFTWARE

Bayesian Extinction And Stellar Tool (BEAST) 2019 - Present

Active Developer

Open-source Python package for probabilistically modeling dust-extinguished multi-band spectral energy distributions of resolved stellar populations in nearby galaxies.

AsteroGaP 2018 - 2021

Lead Developer

Open-source bayesian Python package for modeling sparse asteroid light curve profiles with Gaussian Processes and Markov Chain Monte Carlo models for Zwicky Transient Facility and Rubin Observatory data.

OBSERVING PROGRAMS AS PI

Hubble Space Telescope Cycle 31 - 15 orbits

2023 PI: Winging the SMC: 3D Structure of the Interstellar Medium in the Tidally Disrupted Wing of the SMC

James Webb Space Telescope Cycle 4 - 12 hours orbits

2023 PI: Winging the SMC: 3D Structure of the Interstellar Medium in the Tidally Disrupted Wing of the SMC

OBSERVING PROGRAMS AS CO-I

James Webb Space Telescope Cycle 3 - 25.8 hours

2024 Co-I: Zooming-in on the sub-grid physics of PAHs at 20% solar metallicity

Hubble Space Telescope Cycle 32 - 162 orbits

2024 Co-I: Bringing HST to the VLA: The Interaction of Stars and Gas in the Local Group

Hubble Space Telescope Cycle 30 - 12 orbits

2022 Co-I: Taming the BEAST of N66 to resolve how star formation shapes the interstellar medium at low metallicity

Hubble Space Telescope Cycle 26 - 73 orbits

2018 Co-I: QuaStar: The first unobscured view of the Milky Way's Circumgalactic Medium

LEADERSHIP EXPERIENCE

JHU Physics and Astronomy Graduate Students (PAGS) - President 2022 - 2023

Represented +130 graduate students and coordinated initiatives to improve the graduate experience within the JHU Physics and Astronomy Department e.g. pay raises, travel grants, professional society memberships, mentorship program, etc. Led discussions with the department chair and graduate program committee to improve faculty-student communication and gender equity, .

Astronomy Graduate Congress - JHU Representative 2024 - Present

Served as JHU representative for the Astronomy Graduate Congress, which provides a common platform for graduate students to discuss issues regarding graduate education in astronomy.

Gender Minorities and Women in Physics (GWIP) JHU Chapter - LOC Member 2023 - Present

Helped organize +100 person annual GWIP Summit aimed at fostering connections among women and gender minorities in physics across all career stages and institutions in the DMV region.

MENTORING

JHU PHA Mentorship Program

Sasha Levina - First-year graduate student (Fall 2023 - Spring 2024)
Qiushi (Chris) Tian - Post-bac student (Fall 2024 - Present)
Alexia Knight - First-year undergraduate student (Fall 2024 - Present)

TEACHING

Johns Hopkins University

AS 173.111/112 *General Physics Lab I & II* 2019-2020
AS.171.108 *General Physics: Electromagnetism (Active Learning)* 2020
AS 171.101 *General Physics: Physical Science* 2019

University of Washington

ASTR 150 *The Planets* 2018 - 2019
ASTR 101 *Introductory Astronomy* 2018 - 2019
PHYS 122 *Electromagnetism* 2018

GRANTS & AWARDS

JHU Dissertation Prize Fellowship ($50,000) 2025
James Webb Space Telescope Cycle 4 (PI: $220,709) 2024
Hubble Space Telescope Cycle 31 (PI: $134,040) 2024
AAS FAMOUS Travel Grant ($1,000) 2022
.Astronomy 11 Travel Grant 2019
.Astronomy X Travel Grant 2018
DPS Hartmann Student Travel Grant 2018
UW Mary Gates Research Scholarship 2018

SELECTED PRESENTATIONS

Institute for Advanced Science Astrocoffee 2024
Talk: Dust around massive stars is agnostic to galactic environment: New insights from PHAT & BEAST

Princeton Thunch 2024
Seminar: Reading Between the Stars: Resolving the Multi-Scale Interstellar Medium in Local Group Galaxies

Harvard-Smithsonian CfA ITC Luncheon 2024
Seminar (Invited): Reading Between the Stars: Resolving the Multi-Scale Interstellar Medium in Local Group Galaxies

Columbia Astronomy 2024
Seminar: Reading Between the Stars: Resolving the Multi-Scale Interstellar Medium in Local Group Galaxies

Astronomy on Tap - Baltimore 2024
Talk: Massive Stars and Where to Find Them

HotSci@JHU/STScI 2024
Talk: The Future of HST - Tracing the Multi-Phase ISM via Dust Extinction in Nearby Galaxies with UV Photometry

STScI Spring Symposium: Recipes to Regulate Star Formation at All Scales 2024
Poster: Dust around massive stars is agnostic to galactic environment: New insights from PHAT & BEAST

Flatiron Institute CCA: XMC Workshop 2024
Talk: Constraining the 3D Structure of the ISM in 30 Doradus with Scylla

Resolving Galaxy Ecosystems Across All Scales 2023
Plenary Talk: Dust Around Massive Stars is Agnostic to Galactic Environment

237rd Meeting of the American Astronomical Society 2021
Poster & Talk: Investigating Massive Stars in M31

233rd Meeting of the American Astronomical Society 2019
Talk: A Bayesian-Based Method for Inferring Asteroid Properties from Sparse Light Curve

50th Meeting of the Division of Planetary Sciences 2018
Talk: A Bayesian-Based Method for Inferring Asteroid Properties from Sparse Light Curve

Mary Gates 21st Annual Undergraduate Research Symposium 2018
Talk: Werk SQuAD: The Quest to Better Understand Galaxies and Their Surrounding Medium

231rd Meeting of the American Astronomical Society 2018
Poster: Classifying Variable Sources in SDSS Stripe 82

LIST OF PUBLICATIONS

First-Author Publications

3. **C. W. Lindberg**, C. E. Murray, P. Yanchulova Merica-Jones, C. Bot, C. Burhenne, Y. Choi, C. J. Clark, R. E. Cohen, K. M. Gilbert, S. R. Goldman, K. D. Gordon, A. S. Hirschauer, K. B. McQuinn, J. C. Roman-Duval, K. M. Sandstrom, E. Tarantino, B. F. Williams, "*Scylla IV: Intrinsic Stellar Properties and Line-of-Sight Dust Extinction Measurements Towards 1.5 Million Stars in the SMC and LMC*", 2024, *submitted to ApJ*

2. **C. W. Lindberg**, C. E. Murray, J. Dalcanton, J. E. G. Peek, K. D. Gordon, "*Dust around massive stars is agnostic to galactic environment*", 2024, *ApJ, 963, 58*

1. **C. W. Lindberg**, D. Huppenkothen, R. L. Jones, B. T. Bolin, M. Jurić, V. C. Golkhou, E. C. Bellm, A. J. Drake, M. Graham, R. Laher, A. A. Mahabal, F. J. Masci, R. L. Riddle, K. Min Shin, "*Characterizing Sparse Asteroid Light Curves with Gaussian Processes*", 2022, *AJ, 163, 29*

Other Publications (†= significant contribution)

7. K. M. Gilbert, Y. Choi, M. L. Boyer, [19 authors, incl. **C. W. Lindberg**], "*The Local Ultraviolet to Infrared Treasury I. Survey Overview of the Broadband Imaging*", 2024, *accepted to ApJS*

6. R. Cohen, K. B. W. McQuinn, C. E. Murray, B. F. Williams, Y. Choi, **C. W. Lindberg**, C. Burhenne, K. D. Gordon, P. Yanchulova Merica-Jones, C. Bot, A. E. Dolphin, K. M. Gilbert, S. R., Goldman, A. S. Hirschauer, K. M. Sandstrom, O. G. Telford,"*Scylla III. The Outside-In Radial Age Gradient in the Small Magellanic Cloud and the Star Formation Histories of the Main Body, Wing and Outer Regions*", 2024, *accepted to ApJ*

5. R. Cohen, K. B. W. McQuinn, C. E. Murray, B. F. Williams, Y. Choi, **C. W. Lindberg**, C. Burhenne, K. D. Gordon, P. Yanchulova Merica-Jones, K. M. Gilbert, M. L. Boyer, S. R., Goldman, A. E. Dolphin, O. G. Telford, "*Scylla II. The Spatially Resolved Star Formation History of the Large Magellanic Cloud Reveals an Inverted Radial Age Gradient*", 2024, *accepted to ApJ*

4. C. Murray, †**C. W. Lindberg**, P. Yanchulova Merica-Jones, B. F. Williams, R. E. Cohen, K. D. Gordon, K. B. W. McQuinn, Y. Choi, C. Burhenne, K. M. Sandstrom, C. Bot, L. C. Johnson, S. R., Goldman, C. J. R. Clark, J. C. Roman-Duval, K. M. Gilbert, J. E. G. Peek, A. S. Hirschauer, M. L. Boyer, A. E. Dolphin, "*Scylla I: A pure-parallel, multi-wavelength imaging survey of the ULLYSES fields in the LMC and SMC*", 2024, *accepted to ApJS*

3. T. Wainer, B. F. Williams, L. C. Johnson, [18 authors, incl. **C. W. Lindberg**], "PHATTER. VI. The High-Mass Stellar IMF in M33", 2024, *ApJ, 168, 86*

2. C. E. Murray, S. Hasselquist, J. E. G. Peek, **C. W. Lindberg**, A. Almeida, Y. Choi, J. Craig, H. Dénes, J. M. Dickey, E. Di Teodoro, C. Federrath, I. A. Gerrard, S. J. Gibson, D. Leahy, M. Y. Lee, C. Lynn, Y. K. Ma, A. Marchal, N. M. McClure-Griffiths, D. Nidever, H. Nguyen, N. M. Pingel, E. Tarantino, L. Uscanga, J. T. van Loon, "*A Galactic Eclipse: The Small Magellanic Cloud is Forming Stars in Two, Superimposed Systems*", 2023, *ApJ, 962, 120*

1. B. Williams, M.J. Durbin, J. Dalcanton [21 authors, incl. **C. W. Lindberg**], "*The Panchromatic Hubble Andromeda Treasury: Triangulum Extended Region (PHATTER) I. Ultraviolet to Infrared Photometry of 22 Million Stars in M33*", 2021, *ApJS, 253, 53*