CHRISTIAN KRAGH JESPERSEN

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EDUCATION

PhD	Astrophysical Sciences, Princeton University	2021 – 2026 (expected)
MA	Astrophysical Sciences, Princeton University	2021– 2023
BSc	Physics, University of Copenhagen	2018 - 2021

PROFESSIONAL EXPERIENCE

Undergraduate Researcher and Outreach Assistant Nov. 2018 – Feb. 2021
Institution: Cosmic Dawn Center (DAWN)
Advisor: Ass. Prof. Charles L. Steinhardt/Prof. Sune Toft

Caltech Summer Undergraduate Research Fellow Jun. 2019 – Sep. 2019
Institution: California Institute of Technology
Advisor: Marvin L. Goldberger Professor of Planetary Science, David John Stevenson

PUBLICATIONS

Papers

Jespersen, C. K., Steinhardt, C. L., Somerville, R. S., and Lovell, C. C. (2024), "On the Significance of Rare Objects at High Redshift: The Impact of Cosmic Variance," *The Astrophysical Journal,* in review.

Wu, J. F., **Jespersen, C. K.**, and Wechsler, R. H. (2024), "How the Galaxy-Halo Connection Depends on Large-Scale Environment," *The Astrophysical Journal,* in review.

Chuang, C.-Y., **Jespersen, C. K**., … Genel, S. (2024), "Leaving No Branches Behind: Predicting Baryonic Properties of Galaxies from Merger Trees," *The Astrophysical Journal,* in press.

Vujeva, L., Steinhardt, C. L., **Jespersen, C. K.**, … Sneppen, A. B. (2023), "Efficient survey design for finding high-redshift galaxies with *JWST*," *The Astrophysical Journal,* in review.

Ito, K., Valentino, F., … **Jespersen, C. K.**, … Wright, L. (2023), "Size - Stellar Mass Relation and Morphology of Quiescent Galaxies at z≥3 in Public *JWST* Fields," *The Astrophysical Journal,* in review.

Hassan, S., Lovell, C. C., … **Jespersen, C. K.**, … Bera, A. (2023), "JWST constraints on the UV luminosity density at cosmic dawn: implications for 21-cm cosmology," *The Astrophysical Journal Letters,* Vol. 958.

Wu, J. F. & **Jespersen, C. K.** (2023), "Learning the galaxy-environment connection with graph neural networks," International Conference on Machine Learning.

Weaver, J. R., Davidzon, I., … **Jespersen, C. K.** … Zamorani, G. (2023), "COSMOS2020: The galaxy stellar mass function. The assembly and star formation cessation of galaxies at $0.2< z \leq 7.5$," *Astronomy & Astrophysics,* Vol. 677.

Valentino, F., Brammer, G., … **Jespersen, C. K.**, … Toft, S. (2023), "An Atlas of Color-selected Quiescent Galaxies at $z>3$ in Public JWST Fields," *The Astrophysical Journal,* Vol 947, no. 1.

Steinhardt, C. L., Mann, W. J., Rusakov, V. & **Jespersen, C. K.** (2023), "Classification of BATSE, Swift, and Fermi Gamma-Ray Bursts from Prompt Emission Alone," *The Astrophysical Journal,* Vol. 945, no. 1.

Jespersen, C. K., Cranmer, M., Melchior, P., Ho, S., Somerville, R. S. & Gabrielpillai, A. (2022), "Mangrove: Learning Galaxy Properties from Merger Trees," *The Astrophysical Journal,* Vol. 941, no. 1.

Weaver, J. R., Kauffmann, O. B., … **Jespersen, C. K.** … Zamorani, G. (2022), "COSMOS2020: A Panchromatic View of the Universe to $z = 10$ from Two Complementary Catalogs," *The Astrophysical Journal Supplement Series,* Vol. 258, no. 1.

Lesniewska, A., Michalowski, M. J., … **Jespersen, C. K**., … Watson, D. (2022), "The Interstellar Medium in the Environment of the Supernova-Less Long-Duration GRB111005A," *The Astrophysical Journal Supplement Series,* Vol. 259, no. 2.

Steinhardt, C. L., **Jespersen, C. K**., Linzer, N. B. (2021), "Finding High-Redshift Galaxies with JWST," *The Astrophysical Journal,* Vol. 923, no. 1.

Jespersen, C. K., Severin, J. B., … Watson, D. (2020), "An Unambiguous Separation of Gamma-Ray Bursts into Two Classes from Prompt Emission Alone.," *The Astrophysical Journal*, Vol. 896, no. 2.

Jespersen, C. K. & Stevenson, D. J. (2019), "Investigating Radius Increases in Hot Exoplanets," *Bulletin of the American Astronomical Society,* Vol. 52.

Books

Textbook: Hansen, C, Bruun, S. H., Robl, J. B., **Jespersen, C. K**., Larsen, J. Ø., Jensen, R. B., Ditlefsen, E. S., Thomsen, J. S. (2019). *Kompendium for Fysik Camp 2019 (Compendium for Physics Camp)*, *UNF Print*.

Textbook: Hansen, C, Bruun, S. H., Robl, J. B., **Jespersen, C. K**., Osman, J. O., Jensen, R. B., Ditlefsen, E. S., Thomsen, J. S. (2018). *Kompendium for Fysik Camp 2018 (Compendium for Physics Camp)*, *UNF Print*.

TALKS

"Airglow and The Subaru Night Sky Spectrograph (SuNSS)", AAS Winter Meeting, 2024

"Galaxies and Graphs", Hammers & Nails Conference, 2023

"Galaxies and Graphs", Center for Computational Astrophysics Cosmic Connections Meeting, 2023

"Mangrove: Learning Galaxy Properties from Merger Trees", John Hopkins/Space Telescope Science Institute Galaxy Evolution Group, 2023

"Mangrove: Learning Galaxy Properties from Merger Trees", Kavli Institute of Theoretical Physics Data-Driven Galaxy Evolution Workshop, 2023

"The Unreasonable Efficiency of Graph Neural Networks in Physics", Kavli Institute of Theoretical Physics Data-Driven Galaxy Evolution Workshop, 2023

"An Atlas of Color-Selected Quiescent Galaxies", Princeton University Astrocoffee, 2023

"The Unreasonable Efficiency of Graph Neural Networks in Physics", Instituto de Astrofísica de Canarias, 2023

"The Unreasonable Efficiency of Graph Neural Networks in Physics", Flatiron Institute, 2023

"Classification of BATSE, Swift, and Fermi Gamma-Ray Bursts from Prompt Emission Alone", Princeton University Astrocoffee, 2023

"Mangrove: Learning Galaxy Properties from Merger Trees", Princeton University Astrocoffee, 2022

"Learning Galaxy Properties from Merger Trees with Mangrove", Euclid Consortium Meeting, 2022

"Learning Galaxy Properties from Merger Trees with Graph Neural Networks", Brown University Machine Leaning Seminar, 2022

"Learning Galaxy Properties from Merger Trees", Flatiron Institute MLxAstro Group, 2021

"Finding High-Redshift Galaxies with JWST", Princeton University Astrocoffee, 2021.

"Optimizing Reconstruction and Error Estimation of IceCube Events Using Graph Neural Networks," University of Toronto, 2021.

"An Unambiguous Separation of Gamma-Ray Bursts into Two Classes from Prompt Emission Alone," University of Toronto, 2021.

"Optimizing Reconstruction and Error Estimation of IceCube Events Using Graph Neural Networks," IceCube Collaboration, 2021.

"Optimizing Reconstruction and Error Estimation of IceCube Events Using Graph Neural Networks," NBI and Technical University of Munich IceCube Groups, 2021.

"Physics, Science, and How to Become an Astrophysicist," Guest Lecturer, Fredensborg Skole and Frederiksborg Gymnasium og HF, 2020.

"Gradient Boosted Reweighting: A tool for improving models trained in Monte Carlo Simulation," Niels Bohr Institute, IceCube Neutrino Group Workshop, 2020.

"An Unambiguous Separation of Gamma-Ray Bursts into Two Classes from Prompt Emission Alone," DAWN Summit, Cosmic Dawn Center, 2020.
"PSF Deconvolution in the COSMOS2020 Field," Cosmic Dawn Center, DARK, and AstroNu Groups, 2020.

"Investigating Radius Increases in Hot Exoplanets," Chambliss Poster Presentation, 235th AAS Meeting, 2019.

"Possibilities for Undergraduate Research – in Denmark and Overseas," University of Copenhagen STEM Council, 2019.

"Investigating Radius Increases in Hot Exoplanets," Caltech Summer Seminar, 2019.

"A Possible Unambiguous Separation of Gamma-Ray Bursts from Prompt Emission Alone," NBI Astronomy Cake Talk, Cosmic Dawn Center, DARK, and AstroNu Groups, 2019.

MEDIA APPEARANCES

"Solved astronomy mystery after just one year at university," University of Copenhagen University Post, print and online article.

"Tre danske studerende har løst astronomisk mysterium - folk ringer fra hele verden (*Three Danish students have solved an astronomical mystery – people are calling from all over the world*)," TV2, online article.

"Tre danske studerende har løst astronomisk mysterium - folk ringer fra hele verden (*Three Danish students have solved an astronomical mystery – people are calling from all over the world*)," TV2, Go'morgen Danmark (*Good Morning Denmark*), national cable.

COLLABORATION MEMBERSHIPS

Learning the Universe (LtU)
Prime Focus Spectrograph (PFS)
Legacy Survey of Space and Time - Dark Energy Science Collaboration (LSST-DESC)
COSMOS Survey
James Webb Space Telescope – The Beasts in The Bubbles

ADVISING

Adi Varshney (Graduate Student, Cambridge University) Oct. 2023 –
Suvan Shah (Graduate Student, Cambridge University) Oct. 2023 –
Chen-Yu Chuang (Graduate Student, ASIAA/University of Arizona) May 2022 –
W. J. Mann (Undergraduate, U of Massachusetts, Amherst) Sep. 2021 – Jan. 2023
A. Mullan (High School Student) Jul. 2023 – Nov. 2023

COMMUNITY

Garden Coordinator Oct. 2023 –
Lakeside Graduate Apartments Committee

Outreach Speaker Aug. 2023 –
Astronomy on Tap Trenton

High School Research Mentor Jul. 2023 –
Princeton University

Invited Reviewer May 2023 –
The Astrophysical Journal

Invited Reviewer Dec. 2022 –
Monthly Notices of the Royal Astronomical Society

Graduate Student Peer Mentor Sep. 2022 –
Princeton University, Department of Astrophysical Sciences

Organizer/Observer Sep. 2022 –
Princeton University Public Observing Nights

Graduate Student Committee Member Sep. 2021 –
Princeton University, Department of Astrophysical Sciences

Head Organizer May 2019 – Jul. 2021
Physics* – Inspirational Talks, University of Copenhagen

Co-Founder and Co-Organizer Sep. 2018 – Jul. 2021
Project Eøler Coding Club, University of Copenhagen

Lecturer and Curriculum Co-Author Jun. 2018 – Aug. 2019
Danish Youth Association of Science

CONFERENCES/WORKSHOPS ORGANIZED

Simulation-Based Inference for Galaxy Formation
Member of the Scientific Organizing Committee, Bristol University Apr. 2024

CODING LANGUAGES & SOFTWARE

- Python – Expert
- Linux – Advanced
- Git – Intermediate
- IDL – Intermediate
- HTML – Intermediate

SPOKEN/WRITTEN LANGUAGES

- Danish – Native
- English – Bilingual Proficiency
- Portuguese – Bilingual Proficiency
- Spanish – Advanced (O)/Advanced (W)
- Norwegian – Advanced (O)/Advanced (W)
- Swedish – Advanced (O)/Advanced (W)
- French – Intermediate (O)/Intermediate (W)