

Dylan L. Jow, PhD

Kavli Institute for Particle Astrophysics and Cosmology
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Academic Employment

Kavli Fellow at the Kavli Institute for Particle Astrophysics and Cosmology
Stanford University **2024 – present**

Education

2018 – 2024 PhD in Physics at the Department of Physics, University of Toronto and the Canadian Institute for Theoretical Astrophysics

2014 – 2018 BSc. in Combined Honours Physics and Mathematics with Distinction, from the University of British Columbia (UBC)

Teaching Experience

Instructor for PHY483, Relativity Theory I, at the UofT Department of Physics **2022**

- Having TAed the course for three years, I became full instructor of PHY483 partway through the fall term as an emergency replacement for the original instructor. This involved delivering lectures; and making, administering, and grading learning assessments. I was awarded the Van Kranendonk teaching award for my work.

Teaching Assistant for UofT Department of Physics **2018 – 2024**

Teaching Assistant (Grader) for UBC Department of Mathematics **2015 – 2017**

Leadership

Canadian Institute for Theoretical Astrophysics Visitors Committee **2021 – 2024**

- Responsibilities included inviting speakers and facilitating visits to CITA.

GPT-4 for Astronomy Exploratory Committee **2023**

- Participated in pilot study of new generative AI technology in astronomy research. Reported findings to general CITA community.

Executive of the Physics Graduate Student Association at UofT **2019 – 2020**

- Responsibilities included organizing social events and advocating for student concerns within the Department of Physics.

Outreach and Lay Publications

Dylan L. Jow, "The Art of Scientific Writing", Presentation for UofT Department of Astronomy Summer Undergraduate Research Program, July 2 2024

Dylan L. Jow, "Opinion: Grades are failing students", *The Varsity*, <https://thevarsity.ca/2023/02/04/opinion-im-a-u-of-t-instructor-and-i-believe-we-need-to-abolish-grades/>, February 4 2023

Dylan L. Jow, "Wonder and Awe in Astronomy", *Cosmos From Your Couch*, <https://www.dunlap.utoronto.ca/events/wonder-and-awe-in-astronomy/>, June 18 2022

Awards and Scholarships

Van Kranendonk Teaching Assistant Award	2023
Mitacs Globalink Research Award,	2022
NSERC Canada Graduate Scholarship – Doctoral	2021
Ontario Graduate Scholarship	2019
UofT Faculty of Arts and Science Admission Award	2018
Thomas and Evelyn Hebb Memorial Scholarship	2017
Stanley M Grant Scholarship in Mathematics	2017
Stanley M Grant Scholarship in Mathematics	2016
J Fred Mui Memorial Scholarship in Science	2015
Janusz J. Klawe Memorial Science One Scholarship	2015
Governor General's Academic Bronze Medal	2014

Selected Student Evaluations

"[Dylan] has provided some of the best teaching I've received throughout my four years at UofT and is very supportive and understanding of the class and its needs." – From PHY483 Student Evaluations, Fall 2022

"[Dylan] is an exceptional example of going to great lengths to ensure you learn the material, and then going a step beyond to do a little more." – From PHY483 Student Evaluations, Fall 2022

Conference Talks and Presentations

"From Dust to Dust: Lessons from Scintillation and Radio Scattering" Making Light of the Universe, University of British Columbia	2024
"Cusps of cusps: a universal model for extreme scattering in the ISM" Fields, Flows, and Filaments in the Magnetic ISM Workshop, Stanford University	2024
"Wave lensing for precision cosmology" Coffee talk at the Department of Astrophysical Sciences, Princeton University	2023
"FRB lensing: probing matter inhomogeneities transverse to the line of sight" Invited talk for Peng Oh's group at UCSB	2023
"Real-time tunneling through complexified path integrals" String Theory Seminar at National Taiwan University	2023
"Where have all the lenses gone? Scattering of gravitationally lensed FRBs" 2023 FRB Conference at the National Chung Hsing University	2023

<p>“Prospects for gravitational and plasma lensing of FRBs” Lunch Talk at ASIAA</p>	2023
<p>“Cusps of cusps: a universal model for extreme scattering in the ISM” Cosmology Discussion Group at the Perimeter Institute</p>	2022
<p>“Cusps of cusps: a universal model for extreme scattering in the ISM” Invited seminar at the Theoretical Astrophysics Including Relativity and Cosmology Institute, Caltech</p>	2022
<p>“Wave optics in astrophysical lensing: unlocking the potential of the coherent sky” Invited seminar at the Mullard Space Science Laboratory</p>	2022
<p>“Wave optics in astrophysical lensing: unlocking the potential of the coherent sky” Invited seminar at the Berkeley Centre for Cosmological Physics</p>	2022
<p>“Wave optics in astrophysical lensing: unlocking the potential of the coherent sky” Brown Bag Lunch Talk at MIT</p>	2022
<p>“Wave optics in astrophysical lensing: unlocking the potential of the coherent sky” Stanford Tea Talk</p>	2022
<p>“Regimes in astrophysical lensing: refractive optics, diffractive optics, and the Fresnel scale” 2022 Scintillometry Conference at the Canadian Institute for Theoretical Astrophysics</p>	2022
<p>“Imaginary images and Stokes phenomena in the weak lensing of coherent sources” Invited talk for the radio astronomy group at Caltech</p>	2021
<p>“Wave Optics in Gravitational Lensing” 2019 Scintillometry Conference at the Max Planck Institute for Radio Astronomy</p>	2019

Publications

Published

Dylan L. Jow, Ue-Li Pen, Daniel Baker, On the cusp of cusps: a universal model for extreme scattering events in the ISM, *MNRAS*, <https://doi.org/10.1093/mnras/stae300>. March 2024.

Dylan L. Jow, Ue-Li Pen, Job Feldbrugge, Regimes in astrophysical lensing: refractive optics, diffractive optics, and the Fresnel scale, *MNRAS*, <https://doi.org/10.1093/mnras/stad2332>. August 2023.

F.X. Lin, R.A. Main, **Dylan L. Jow**, D.Z. Li, U.L. Pen, M.H. Van Kerkwijk, Plasma lensing near the eclipses of the Black Widow pulsar B1957+20, *MNRAS*, <https://doi.org/10.1093/mnras/stac3456>. Volume 519, Issue 1, February 2023, Pages 121-135

Dylan L. Jow, Ue-Li Pen, Measuring lens dimensionality in extreme scattering events through wave optics, *MNRAS*, <https://doi.org/10.1093/mnras/stac1652>. Volume 514, Issue 3, August 2022, Pages 4069-4077.

Dylan L. Jow, Fang Xi Lin, Emily Tyhurst, Ue-Li Pen, Imaginary images and Stokes phenomena in the weak plasma lensing of coherent sources, *MNRAS*, <https://doi.org/10.1093/mnras/stab2337>. Volume 507, Issue 4, November 2021, Pages 5390-5402.

Dylan L. Jow, Simon Foreman, Ue-Li Pen, Wei Zhu, Wave effects in the microlensing of pulsars and FRBs by point masses, *MNRAS*, <https://doi.org/10.1093/mnras/staa2230>. Volume 497, Issue 4, October 2020, Pages 4956-4969.

Dylan L. Jow, Douglas Scott, Re-evaluating evidence for Hawking points in the CMB, *JCAP*, doi: 10.1088/1475-7516/2020/03/021. Volume 2020, March 2020.

Dylan L. Jow, Dagoberto Contreras, Douglas Scott, Emory F. Bunn, Taller in the saddle: constraining CMB physics using saddle points, *JCAP*, doi: 10.1088/1475-7516/2019/03/031. Volume 2019, March 2019.

Dylan L. Jow, Ryley Hill, Douglas Scott, J.D. Soler, P.G. Martin, M.J. Devlin, L.M. Fissel, F. Poidevin; An application of an optimal statistic for characterising relative orientations, *MNRAS*, <https://doi.org/10.1093/mnras/stx2736>. Volume 474, Issue 1, February 2018, Pages 1018-1027.

Pre-print

Dylan L. Jow, Ue-Li Pen, Measuring cosmic expansion with diffractive gravitational scintillation of nanoHertz gravitational waves, *arxiv*, <https://arxiv.org/abs/2407.03214>. July 2024.

Job Feldbrugge, **Dylan L. Jow**, Ue-Li Pen, Crossing singularities in the saddle point approximation, *arxiv*, <https://arxiv.org/abs/2309.12427>. September 2023.

Job Feldbrugge, **Dylan L. Jow**, Ue-Li Pen, Complex classical paths in quantum reflections and tunneling, *arxiv*, <https://arxiv.org/abs/2309.12420>. September 2023.

Dylan L. Jow, Xiaohan Wu, Ue-Li Pen, Refractive lensing of scintillating FRBs by sub-parsec cloudlets in the multi-phase CGM, *arxiv*, <https://arxiv.org/abs/2309.07256>. September 2023.

Anna Tsai, **Dylan L. Jow**, Daniel Baker, Ue-Li Pen, Scintillated microlensing: measuring cosmic distances with fast radio bursts, *arxiv*, <https://arxiv.org/abs/2308.10830>. August 2023.

Calvin Leung, **Dylan L. Jow**, Prasenjit Saha, Liang Dai, Masamune Oguri, L.V.E. Koopmans, Wave Mechanics, Interference, and Decoherence in Strong Gravitational Lensing, *arxiv*, <https://arxiv.org/abs/2304.01202>. April 2023.