
Appointments

- 2026-present **Canada Postdoctoral Research Award Fellow**, University of Waterloo, Waterloo, ON.
Supervisors: Alex Stringer, Will J. Percival
Independent fellowship with 12,000 CAD annual research budget.
- 2025-2026 **Postdoctoral Fellow**, University of Toronto, Toronto, ON.
Supervisors: Gwendolyn Eadie, Roberto Abraham
- 2023-2025 **Data Sciences Institute Doctoral Fellow**, University of Toronto, Toronto, ON.
- 2020-2025 **CANSSI Multi-disciplinary Doctoral Trainee**, University of Toronto, Toronto, ON.

Education

- 2020-2025 **PhD in Statistics**, *University of Toronto*.
Thesis: “ADVANCED SPATIAL METHODS FOR ASTROPHYSICS.”
Supervisors: Gwendolyn Eadie, Patrick Brown, Roberto Abraham
- 2018-2020 **MSc in Statistics**, *Western University*.
Thesis: “POINT PROCESS MODELING OF STELLAR OBJECTS IN THE M33 GALAXY.”
Supervisors: A. Ian McLeod, Pauline Barmby
- 2014-2018 **BSc in Mathematical Finance**, *Gold Medalist*, *Western University*.

Grants, Fellowships, & Scholarships

- 2026-2028 Canada Postdoctoral Research Award, Natural Sciences and Engineering Research Council of Canada, **140,000 CAD**
- 2025 ASA Astrostatistics IG Student Paper Competition Winner, Joint Statistical Meeting 2025, **500 USD**
- 2025 ASA Astrostatistics IG Student Paper Competition Finalist, Joint Statistical Meeting 2025, **100 USD**
- 2023 ASA Astrostatistics IG Student Paper Competition Finalist, Joint Statistical Meeting 2023, **100 USD**
- 2023 Department of Statistical Sciences Doctoral Travel and Conference Award, University of Toronto, **3,000 CAD**
- 2023 Department of Statistical Sciences Doctoral Early Research Excellence Awards, University of Toronto, **1,500 CAD**
- 2023-2026 Data Sciences Institute Travel Award, University of Toronto, **4,500 CAD**
- 2023-2026 Data Sciences Institute Doctoral Student Fellowship, University of Toronto, **75,000 CAD**
- 2020-2025 CANSSI Multidisciplinary Doctoral Trainee
- 2020 Doctoral Recruitment Award, **10,000 CAD**
- 2020 E.F. Burton and F. W. Burton Graduate Scholarship Award, **4,000 CAD**

2018-2020 Western Graduate Research Scholarship, **14,000 CAD**
2018 Western Gold Medalist

Scholarly Work

Citation Statistics

Aug 2026 Total: 86; h-index: 5; i-10 index: 3

In Preparation

- [1] **D. Li**, “*Risk-Calibrated Stopping for GP-Surrogate Bayesian Inference*”, In preparation (2026).

Submitted

- [2] **D. Li**, “*Robust Surrogate-based Bayesian Inference via Sampling-based Adaptive Active Learning (SALE)*”, **Submitted to Journal of Machine Learning Research (2026)**.

Published/Accepted

- [†][3] G. Eadie and **D. Li**, “*Statistical Challenges in the Sky: Distribution Functions, Data, and Inference for Stellar Systems*”, Annual Review of Statistics and Its Application (Accepted) (2026).
- [4] A. M. Cook, **D. Li**, G. M. Eadie, D. C. Stenning, P. Scholz, D. Bingham, R. Craiu, B. M. Gaensler, K. Masui, Z. Pleunis, A. Herrera-Martin, R. C. Joseph, A. Pandhi, and A. B. Pearlman, “*k-Contact Distance for Noisy Nonhomogeneous Spatial Point Data, with Application to Repeating Fast Radio Burst Sources*”, **The Annals of Applied Statistics** **20**, 1586–1604 (2026, 6 citations, Astrostatistics Student Paper Competition Winner, JSM 2025).
- [†][5] **D. Li** and Z. Zhang, “*Bayesian Optimization Sequential Surrogate (BOSS) Algorithm: Fast Bayesian Inference for a Broad Class of Bayesian Hierarchical Models*”, **Computational Statistics & Data Analysis** **213**, 108253 (2025, 4 citations).
- [6] **D. Li**, Q. Liu, G. M. Eadie, R. G. Abraham, F. R. Marleau, W. E. Harris, P. van Dokkum, A. J. Romanowsky, S. Danieli, P. E. Brown, and A. Stringer, “*Candidate Dark Galaxy-2: Validation and Analysis of an Almost Dark Galaxy in the Perseus Cluster*”, **The Astrophysical Journal Letters** **986**, L18 (2025, 22 citations).
- [7] **D. Li**, G. M. Eadie, P. E. Brown, W. E. Harris, R. G. Abraham, P. van Dokkum, S. R. Janssens, S. C. Berek, S. Danieli, A. J. Romanowsky, and J. S. Speagle, “*Discovery of Two Ultra-diffuse Galaxies with Unusually Bright Globular Cluster Luminosity Functions via a Mark-dependently Thinned Point Process (MATHPOP)*”, **The Astrophysical Journal** **984**, 147 (2025, 18 citations, Astrostatistics Student Paper Competition Finalist, JSM 2025).
- [8] P. van Dokkum, **D. Li**, R. Abraham, S. Danieli, G. M. Eadie, W. E. Harris, and A. J. Romanowsky, “*Deep HST/UVIS Imaging of the Candidate Dark Galaxy CDG-1*”, **Research Notes of the AAS** **8**, 135 (2024, 8 citations).
- [9] **D. Li**, A. Stringer, P. E. Brown, G. M. Eadie, and R. G. Abraham, “*Poisson Cluster Process Models for Detecting Ultra-Diffuse Galaxies*”, **The Annals of Applied Statistics** **19**, 261–285 (2025, 5 citations).

[†] Shared first authorship. Names are listed alphabetically.

- [10] **D. Li**, G. M. Eadie, R. Abraham, P. E. Brown, W. E. Harris, S. R. Janssens, A. J. Romanowsky, P. van Dokkum, and S. Danieli, “*Light from the Darkness: Detecting Ultra-diffuse Galaxies in the Perseus Cluster through Over-densities of Globular Clusters with a Log-Gaussian Cox Process*”, *The Astrophysical Journal* **935**, 3 (2022, 16 citations, Astrostatistics Student Paper Competition Finalist, JSM 2023).
 - [11] **D. Li** and P. Barmby, “*Gibbs Point Process Model for Young Star Clusters in M33*”, *Monthly Notices of the Royal Astronomical Society* **501**, 3472–3489 (2020, 7 citations).
- Telescope Observing Proposals
- [12] P. van Dokkum, R. Abraham, S. Danieli, G. Eadie, W. Harris, **D. Li**, and A. Romanowsky, “*A Candidate Nearly-Dark Galaxy with 4 Globular Clusters*”, Hubble Space Telescope Proposal, GO 17454 (2023).
 - [13] **D. Li**, R. Abraham, S. Danieli, G. Eadie, P. Brown, W. Harris, A. Romanowsky, and P. van Dokkum., “*Deep Imaging of a Candidate Dark Galaxy in Perseus*”, Gemini Consortium, GN-2022B-Q-109 (2022).

--- Talks, Presentations & Others

Invited Talks

- 2025 “*Approximate Bayesian Inference through Adaptive Sampling-based Bayesian Optimization and Active Learning.*” (upcoming) 19th International Joint Conference CFE-CMStatistics, Birkbeck, UK
- 2025 “*The Future is Dark and Full of Galaxies: A New Method to Detect Dark Galaxies.*” 10 Years of Ultra-Diffuse Galaxies: Past Perspectives and Future Prospects, Benasque, Huesca, Spain
- 2025 “*Globular Cluster Counts in Ultra-Diffuse Galaxies through a Mark-Dependently Thinned Point Process (MATHPOP).*” Astrostatistics Student Paper Competition, Joint Statistical Meeting 2025, Nashville, TN
- 2023 “*Learning how to Count Again: Inferring Globular Cluster Counts in Ultra-Diffuse Galaxies with Bayesian Marked-Dependently Thinned Poisson Point Process.*” Astrostatistics in Canada and Beyond, Banff, AB
- 2023 “*Principled Bayesian Inference for estimating Globular Cluster Counts in Ultra-Diffuse Galaxies using Mark-Dependently Thinned Point Process.*” International CHASC AstroStatistics Centre, Harvard University, Cambridge, MA
- 2023 “*Detecting Ultra-Diffuse Galaxies through their Globular Clusters by Point Process Model.*” Astrostatistics Student Paper Competition, Joint Statistical Meeting 2023, Toronto, ON
- 2022 “*Detecting Ultra-Diffuse Galaxies in the Perseus Cluster using Log-Gaussian Cox Process.*” Cluster at McMaster, McMaster University, ON
- 2022 “*Light from the Darkness: Detecting Ultra-Diffuse Galaxies in the Perseus Cluster using Log-Gaussian Cox Process.*” Advances in Astrostatistics in the Great White North —Invited Session, Joint Statistical Meeting 2022, Washington, DC

Contributed Talks

- 2024 “*Bayesian Optimization Sequential Surrogate (BOSS): Fast Bayesian Inference for Conditional Latent Gaussian Models.*” Statistical Society of Canada Annual Meeting 2024, St John’s, NL
- 2020 “*Gibbs Point Process Model for Objects in the Star Formation Complexes of M33.*” Innovations in Statistics for Astronomy and Space Physics —Topic Contributed Session, Joint Statistical Meeting 2020, Pennsylvania, PA

Poster Presentations

- 2023 “*Learning how to Count Again: Inferring Globular Cluster Counts in Ultra-Diffuse Galaxies with Bayesian Marked-Dependently Thinned Poisson Point Process.*” Poster Presentation, Data Sciences Institute Research Day, Toronto, ON
- 2022 “*Poisson Cluster Process Models for Detecting Ultra-Diffuse Galaxies.*” CANSSI Ontario Research Day, Toronto, ON

Media Coverage

- 2026 [Anton Petrov YouTube Coverage](#): “*Hubble Just Found a Ghost Galaxy (99% Dark Matter).*”
- 2026 [CTV News](#): “*Canadian researchers find near-invisible ‘ghost galaxy’.*”
- 2026 [CNN](#): “*NASA’s Hubble telescope detects possible ‘dark galaxy’.*”
- 2026 [BBC](#): “*This galaxy is pretty much all dark matter. And it took our most powerful telescopes to even find it.*”
- 2026 [WIRED](#): “*A Galaxy Composed Almost Entirely of Dark Matter Has Been Confirmed.*”
- 2026 [AAAS Science](#): “*Hubble spotted a ‘dark galaxy’ that’s at least 99.9% dark matter.*”
- 2026 [NASA](#): “*NASA’s Hubble Identifies One of Darkest Known Galaxies.*”
- 2025 [Ciel & Espace](#): “*Galaxy made up of 99.99% dark matter discovered in the Perseus cluster.*”
- 2025 [AAS Nova](#): “*Finding Galaxies in the Dark: Using Globular Clusters to Identify Ultra-Diffuse Galaxies.*”
- 2025 [EarthSky.org](#): “*Dark Galaxy Spotted with the Help of Globular Clusters.*”
- 2025 [EarthSky YouTube Interview](#): “*Astronomers Might Have Found a Dark Galaxy!*”

Software

- 2024 [MATHPOP](#): R package for fitting mark-dependently thinned point process to infer the counts and luminosity functions of globular clusters in low surface-brightness galaxies.

Teaching

- 2025 Course Instructor for STA 347: Probability (Summer) at UTSG
- 2024 Course Instructor for STA 347: Probability (Summer) at UTSG
- 2025 Teaching assistant for STA 255, STA 257, STA 442, STA 437, STA 347 at UTSG
- 2024 Teaching assistant for STA 237, STA 257, STA 261, STA 347, STA 442, STA 447 at UTSG

- 2023 Teaching assistant for STA 257, STA 261, STA 347 at UTSG
- 2022 Teaching assistant for STA 257, STA 261, STA 347 at UTSG
- 2021 Teaching assistant for STA 220, STA 257, STA 261 at UTSG
- 2020 Teaching assistant for STA 257, STA 261, STA 465 at UTSG

Service and Leadership

- 2025 **Organizer**, *STATSTRO 2025 WORKSHOP*, Department of Statistical Sciences & Department of Astrophysics and Astronomy, University of Toronto.
- 2024 **Organizer**, *STATSTRO 2024 WORKSHOP*, Department of Statistical Sciences & Department of Astrophysics and Astronomy, University of Toronto.
- 2023 **Organizer**, *Grant Proposal Writing Workshop*, Department of Statistical Sciences, University of Toronto.
- 2023 **Founder and Organizer**, *STatistics Research Writing And Reading (STAR WAR) Workshop*, Department of Statistical Sciences, University of Toronto.
- 2021-2023 **Student Representative**, *Applied Research and Education Seminar (ARES)*, CANSSI Ontario.

Languages

English Native
Mandarin Native

Professional References

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