

Utkarsh Mali

Department of Physics, University of Toronto
Canadian Institute for Theoretical Astrophysics (CITA)
LIGO Scientific Collaboration (LSC-CITA)
utkarsh.mali@utoronto.ca
www.cita.utoronto.ca/~mali/



EDUCATION

COMPILED ON NOVEMBER 26, 2025

UNIVERSITY OF TORONTO <i>PhD in Physics (Theoretical Astrophysics)</i> Supervisor: Prof. Reed Essick	2023 - PRESENT
UNIVERSITY OF TORONTO <i>MSc in Physics (Theoretical Astrophysics)</i>	2022 - 2023
UNIVERSITY OF TORONTO, VICTORIA COLLEGE <i>HBSc in Physics, Mathematics and Computer Science (High Distinction)</i>	2018 - 2022

EXECUTIVE SUMMARY

Publications (First or Second Author): 3	Publications (Total): 24
h-index (First or Second Author): 3	Total Awards and Grants: \$56,014 CAD

Other highlights: Member of the Board of Governors at Massey College, Crescam Serviendo (Leadership) award and SURF best poster award

PUBLICATIONS

Complete List: [InspireHEP](#)

SHORT AUTHOR

- Mali** and Essick, “Guesswork in the gap: the impact of uncertainty in the compact binary population on source classification”, Nov 2025, *arXiv2511.19393*
- Mali** and Essick, “Striking a Chord with Spectral Sirens: multiple features in the compact binary population correlate with H_0 ”, Feb 2025, *ApJ*
- Mohanty, **Mali**, Das, Kumar, Landry, “Astrophysical constraints on neutron star f-modes with a nonparametric EoS representation”, Oct 2024, *PRD*

LONG AUTHORED PAPERS THAT I HAVE CONTRIBUTED TO

- LVK (incl. **Mali**) “GWTC-4.0: Population Properties of Merging Compact Binaries”, Aug 2025, *arXiv:2508.18083*
- Essick et al. (incl. **Mali**) “Compact Binary Coalescence Sensitivity Estimates with Injection Campaigns during the LIGO-Virgo-KAGRA Collaborations’ Fourth Observing Run”, Aug 2025, *PRD*
- Vogel et al. (incl. **Mali**) “HERON-MKII: A Small Satellite Mission”, 2021, *SSC21-WKII*.

+ Other LIGO-VIRGO-KAGRA Publications

AWARDS AND GRANTS

Total = \$56,014 CAD

Massey College Junior Fellowship

Massey College, University of Toronto
\$5,600

JULY 2024-25

Scientific Machine Learning Travel Grant

Brown University
\$1,914

JUNE 2025

Laura Bassi Editorial Scholarship University of Toronto \$625	APRIL 2025 (DECLINED)
High Performance Computing Travel Grant SciNet, University of Toronto/Georgia Institute of Technology \$3,075	JULY 2023
Summer Undergraduate Research Fellowship Canadian Institute for Theoretical Astrophysics, University of Toronto \$9,500	MAY 2022
Undergraduate Summer Training Program Centre for Global Change Science, University of Toronto \$8,500	MAY 2022 (DECLINED)
Summer Undergraduate Research Fellowship Dunlap Institute, University of Toronto \$9,400	MAY 2022 (DECLINED)
Crescam Serviendo (Leadership) Award Victoria College, University of Toronto	MARCH 2022
Summer Undergraduate Research Fellowship Dunlap Institute, University of Toronto \$9,400	MAY 2021
Summer Undergraduate Research Fellowship: Best Poster Award Dunlap Institute, University of Toronto \$50	MAY 2021
Natalia Krasnopolskaia Memorial Research Fellowship University of Toronto \$3,150	JULY 2020
Undergraduate Research Grant National University of Singapore \$1,900	MAY 2020
Undergraduate Research Grant National University of Singapore \$3,800	MAY 2019

LEADERSHIP, OUTREACH, SERVICE AND VOLUNTEERING

Member, Board of Governors <i>Massey College, University of Toronto</i>	2025 - PRESENT
Member, Journalism Fellow Selection Committee <i>Massey College</i>	2025 - PRESENT
Co-Chair (and Treasurer), House Committee <i>Massey College</i>	2024 - PRESENT
Chair, Non-Resident Committee <i>Massey College</i>	2024 - PRESENT
Volunteer, Science Rendezvous <i>Department of Physics, University of Toronto</i>	2023 - PRESENT
Volunteer, Doors Open Toronto <i>Department of Physics, University of Toronto</i>	2023 - PRESENT
Volunteer, AstroTours	2023 - 2025

<i>Dunlap Institute for Astronomy & Astrophysics</i>	
Volunteer, Astronomy on Tap	2024 - 2025
<i>Dunlap Institute for Astronomy & Astrophysics</i>	
Member, Graduate Liaison Committee	2023 - 2024
<i>Department of Physics, University of Toronto</i>	
Student Member, ISE Advisory Committee	2023 - 2024
<i>Centre for International Experience, University of Toronto</i>	
PhD Representative, Library Committee	2023 - 2024
<i>Department of Physics</i>	
Curriculum Developer, AoU Workshop	2023-2024
<i>Dunlap Institute for Astronomy & Astrophysics</i>	
Juror, Canadian Young Physicist Tournament (CaYPT)	2022 - 2024
<i>STEM Fellowship Charity</i>	
Senior Mentor, International Mentorship Program (VCIM)	2018 - 2022
<i>Victoria College, University of Toronto</i>	
E-Mentor, Vic First-Year Experience	2020 - 2021
<i>Victoria College, University of Toronto</i>	

PRESENTATIONS AND POSTERS

INVITED TALKS

- CITA-Chicagoland Meeting**
Chicago, IL, USA
Insights from LVKs latest observing run using the full population of CBCs
JUNE 2025
- TASTY, Department Seminar**
University of Toronto, Canada
Cosmology using the detected population of gravitational wave sources.
FEBRUARY 2024
- Astronomy Union Research Series**
University of Toronto, Canada
Neutron stars and their fundamental oscillation modes.
JANUARY 2023
- CITA Summer Research Presentations**
University of Toronto, Canada
Neutron stars and their fundamental oscillation modes.
AUGUST 2022
- Dunlap Institute Undergraduate Research Fair**
University of Toronto, Canada
Emulating kilonovae models.
JUNE 2021
- QCrew Group, Center for Quantum Technologies (CQT) Seminars**
Virtual/National University of Singapore
Automating the search for superconducting qubit configurations.
JUNE 2020
- Singapore Synchrotron Light Source Seminars**
National University of Singapore
AUGUST 2019

CONTRIBUTED

- 35th Midwest Relativity Meeting**
Guelph, Canada
Untangling uncertainties in the lower mass gap
NOVEMBER 2025
- CITA Jamboree**
Toronto, Canada
Untangling population uncertainties in the lower mass gap
OCTOBER 2025

10. **CITA Blackboard Seminars**
Toronto, Canada
LIGO-Virgo-KAGRA population results from GWTC-4.0 SEPTEMBER 2025
11. **34th Midwest Relativity Meeting**
Ann Arbor, MI , USA
Striking a Chord with Spectral Sirens NOVEMBER 2024
12. **Nordic Winter School**
Skeikampen, Norway
Cosmology using the detected population of gravitational wave sources. JANUARY 2024
13. **33rd Midwest Relativity Meeting**
Chicago, USA
Cosmology using the detected population of gravitational wave sources. NOVEMBER 2023
14. **Perimeter Institute - CITA Meeting**
Waterloo, Canada
Neutron stars, kilonovae and cosmology using gravitational waves. OCTOBER 2023
15. **Canadian Undergraduate Physics Conference 2020**
Virtual/University of Western Ontario, Canada
Automating the search for superconducting qubit configurations. NOVEMBER 2020
16. **Arts and Science Undergraduate Research Fair**
University of Toronto, Canada
FEBRUARY 2020
- POSTERS
17. **Scientific Machine Learning for Gravitational Wave Astronomy**
ICERM, Brown University, RI, USA
Cosmology using the detected population of gravitational wave sources. JUNE 2025
18. **Canadian Astronomical Society Annual Meeting - CASCA 2024**
University of Toronto, Toronto, Canada
Cosmology using the detected population of gravitational wave sources. JUNE 2024
19. **Hotwiring the Transient Universe VII**
University of Toronto, Toronto, Canada
Cosmology using the detected population of gravitational wave sources. MAY 2024
20. **International High Performance Computing (HPC) Workshop**
Georgia Institute of Technology, Atlanta, USA
High performance computing applications to kilonovae surrogate models. JULY 2023
21. Department of Astronomy Summer Undergraduate Fair
Best Poster Award, University of Toronto, Canada
Emulating kilonovae models. AUGUST 2021
22. Department of Physics **Undergraduate Research Fair (Cancelled)**
University of Toronto, Canada
JANUARY 2021
- OUTREACH
23. **AstroTours**, Outreach Talk
University of Toronto, Canada
A conceptual approach to gravitational wave astrophysics. JULY 2025
24. **Physics Society**, Outreach Talk
United World College of South East Asia (Dover), Singapore
A conceptual approach to gravitational wave astrophysics. APRIL 2023
- INVITED PANELIST
25. Student Leadership, Victoria College
OCTOBER 2025
26. The Non-Resident Experience, Massey College
AUGUST 2025
27. Graduate Life Workshop, Astronomy Union
OCTOBER 2024
28. Graduate Prospective Student Visit, Department of Physics
FEBRUARY 2024

29. Graduate Applications Workshop, Astronomy Union	OCTOBER 2023
30. Vic-Ready Program, Victoria College	OCTOBER 2023
31. Age of Universe Workshop, Dunlap Institute	JULY 2023
32. International Student Orientation, Victoria College	AUGUST 2022

EDUCATION EXPERIENCE

HEAD TEACHING ASSISTANT

PHY131: Introduction to Physics I, University of Toronto FALL 2025

TEACHING ASSISTANT

PHY132: Introduction to Physics II, University of Toronto WINTER 2023, 2025

PHY293: Classical Mechanics, University of Toronto FALL 2024

PHY152: Physics II, University of Toronto WINTER 2024

PHY131: Introduction to Physics I, University of Toronto FALL 2022, 2023

COLLABORATIONS

Cosmic Explorer Consortium

NOVEMBER 2023 - PRESENT

General Member

LIGO Scientific Collaboration

MAY 2023 - PRESENT

Rates & Populations Group, O4a Offline Injections, O4a Rates & Populations Paper, O4b Cosmology Paper

CERTIFICATIONS

Leadership Training, Massey College, UofT 2025

Mentorship Training, DADDAA, UofT 2024

Scientific Computing Certificate, SciNet, UofT 2023

Teaching Fundamentals Certification, UofT 2022

MEDIA APPEARANCES

GWTC-4: Population Properties of Merging Compact Binaries SEPTEMBER 2025
[CITA News](#)

GW230529: Remarkable gravitational-wave signal detected by the LVK. APRIL 2024
[CITA News](#), [UofT ArtSci News](#)

HERON Mk.II Satellite Launch (University of Toronto Aerospace Team) NOVEMBER 2023
[The Varsity](#), [UofT Engineering News](#)

The 2022 Crescam Serviendo Leadership Award Winners APRIL 2022
[Victoria College News](#)

REFERENCES

Prof. Reed Essick
 Department of Physics
 University of Toronto, Canada
essick@cita.utoronto.ca

Dr. Phillipe Landry
 Risk Modeling
 Stripe Canada
pgjlandry@gmail.com

Dr. Keir Rogers
 Department of Physics
 Imperial College London, UK
keir.rogers@utoronto.ca

All other LIGO-VIRGO-KAGRA publications which I was an author on.

18. LVK (incl. **Mali**) “Direct multi-model dark-matter search with gravitational-wave interferometers using data from the first part of the fourth LIGO-Virgo-KAGRA observing run”, 2025
17. LVK (incl. **Mali**) “Cosmological and High Energy Physics implications from gravitational-wave background searches in LIGO-Virgo-KAGRA’s O1-O4a runs”, 2025
16. LVK (incl. **Mali**) “GW241011 and GW241110: Exploring Binary Formation and Fundamental Physics with Asymmetric, High-spin Black Hole Coalescences”, 2025
15. LVK (incl. **Mali**) “Directional Search for Persistent Gravitational Waves: Results from the First Part of LIGO-Virgo-KAGRA’s Fourth Observing Run”, 2025
14. LVK (incl. **Mali**) “Directed searches for gravitational waves from ultralight vector boson clouds around merger remnant and galactic black holes during the first part of the fourth LIGO-Virgo-KAGRA observing run”, 2025
13. LVK (incl. **Mali**) “GW250114: Testing Hawking’s Area Law and the Kerr Nature of Black Holes”, 2025
12. LVK (incl. **Mali**) “GWTC-4.0: Constraints on the Cosmic Expansion Rate and Modified Gravitational-wave Propagation”, 2025
11. LVK (incl. **Mali**) “Upper Limits on the Isotropic Gravitational-Wave Background from the first part of LIGO, Virgo, and KAGRA’s fourth Observing Run”, 2025
10. LVK (incl. **Mali**) “Open Data from LIGO, Virgo, and KAGRA through the First Part of the Fourth Observing Run”, 2025
9. LVK (incl. **Mali**) “GWTC-4.0: Updating the Gravitational-Wave Transient Catalog with Observations from the First Part of the Fourth LIGO-Virgo-KAGRA Observing Run”, 2025
8. LVK (incl. **Mali**) “GWTC-4.0: Methods for Identifying and Characterizing Gravitational-wave Transients”, 2025
7. LVK (incl. **Mali**) “All-sky search for short gravitational-wave bursts in the first part of the fourth LIGO-Virgo-KAGRA observing run”, 2025
6. LVK (incl. **Mali**) “All-sky search for long-duration gravitational-wave transients in the first part of the fourth LIGO-Virgo-KAGRA Observing run”, 2025
5. LVK (incl. **Mali**) “GW231123: a BBH Merger with Total Mass 190-265 M_{\odot} ”, 2025
4. LVK (incl. **Mali**) “Search for continuous gravitational waves from known pulsars in the first part of the fourth LIGO-Virgo-KAGRA observing run”, 2025
3. LVK (incl. **Mali**) “Search for gravitational waves emitted from SN 2023ixf”, 2024.
2. LVK (incl. **Mali**) “A search using GEO600 for gravitational waves coincident with fast radio bursts from SGR 1935+2154”, 2024.
1. LVK (incl. **Mali**) “Observation of Gravitational Waves from the Coalescence of a 2.5–4.5 M_{\odot} Compact Object and a Neutron Star”, 2024.