

# TAILLTE MAY

Perimeter Institute of Theoretical Physics  
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## RESEARCH INTERESTS

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- Fundamental physics with gravitational waves
- Black hole physics, astrophysical black holes and black hole mergers
- Dark matter
- Black hole perturbation theory
- Black hole ringdown and non-linearities
- Physics beyond the Standard Model
- Numerical relativity

## PUBLICATIONS

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- Nonlinear evolution of the spin-2 black hole superradiant instability** *Sep 2025*  
Taillte May, William E. East <https://arxiv.org/abs/2509.13488>
- 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** *Sep 2025*  
LIGO, Virgo, KAGRA et al. <https://arxiv.org/abs/2509.07352>
- Self-gravity effects of ultralight boson clouds formed by black hole superradiance** *Oct 2024*  
Taillte May, William E. East, Nils Siemonsen PRD(2025)111, <https://arxiv.org/abs/2410.21442>
- Nonlinear effect of absorption on the ringdown of a spinning black hole** *May 2024*  
Taillte May, Sizheng Ma, Justin L. Ripley, William E. East PRD(2024)110, <https://arxiv.org/abs/2405.18303>
- SuperRad: Modeling the black hole superradiance gravitational waveform** *Nov 2022*  
Nils Siemonsen, Taillte May, William E. East PRD(2023)107, <https://arxiv.org/abs/2211.03845>
- Quantum imprints of gravitational shockwaves** *Nov 2021*  
Finnian Gray, David Kubiznak, Taillte May, Sydney Timmerman, Erickson Tjoa, JHEP11(2021)054, <https://arxiv.org/abs/2105.09337>

## HONORS AND AWARDS

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- University of Waterloo Research Dissemination Award** *Fall 2024, Winter 2022*  
Award of value 500 CAD, awarded to selected graduate students who are presenting work in conferences.
- Emmy Noether Emerging Talent Award** *2021-2025*  
Award of value 12,500 CAD annually for duration of PhD, awarded to three (from 2021 to 2023) selected Perimeter Institute resident female PhD students to fund research during their PhD.
- Perimeter Residency Award** *Sep 2021*  
Award of value 6,000 CAD annually for duration of PhD, this award guarantees certain PhD students affiliated with Perimeter Institute an office in the institute and the described extra funding in addition to their degree granting university funding.
- Peter and Shelagh Godsoe Family Foundation Award for Exceptional Emerging Talent** *Sep 2021*  
Honorary award. Awarded to two exceptional incoming graduate students each year at Perimeter Institute.

**Perimeter Scholars International Award***Sep 2020*

Award of value 35,000 CAD, awarded to 2.5% of applicants in 2020. This award fully funds the masters program of selected students.

**Gold medal in Theoretical Physics, Trinity College Dublin***Aug 2020*

Honorary award, awarded to graduating Bachelors students who have shown exceptional merit at degree examinations.

**EDUCATION**

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**Perimeter Institute of Theoretical Physics & University of Waterloo .***Sep 2021 - Sep 2025**Ph.D. Physics*

Supervised by William East and Luis Lehner. Thesis: ‘Black hole perturbations beyond the leading order’

**Perimeter Institute of Theoretical Physics & University of Waterloo.***Sep 2020 - Jun 2021**Perimeter Scholars International Certificate & M.Sc. Physics*

Supervised by William East. Thesis: ‘Frequency Evolution of Gravitational Wave Signals Characterizing Black Hole Superradiance’

**Trinity College Dublin, Ireland.***Sep 2016 - Jun 2020**B.A. Theoretical Physics*

Graduated with First Class Honours. Supervised by Gim Seng Ng. Thesis: ‘Could Renormalization Yield a Conceptual Framework for Neural Network Theory?’

**SEMINARS AND CONFERENCE PRESENTATIONS**

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**GR/Amaldi***July 2025*

Presented ‘Spin two field superradiance beyond the linear story’.

**Gravity Seminar, Charles University***May 2025*

Invited talk ‘Using superradiance to search for ultralight bosons’.

**Perimeter Institute Graduate Seminar***October 2024*

Presented ‘Black Hole Ringdown Non-linearities’, <https://pirsa.org/24100138>.

**50 Years of Horndeski***Jul 2024*

Presented ‘Non-Linear Contributions to Ringdown’.

**Midwest Relativity***Nov 2023*

Presented ‘Non-Linear Contribution to Black Hole Ringdown’.

**APS April Meeting***April 2022*

Presented ‘Black Hole Superradiant Clouds and Gravitational Waves’.

**Perimeter Institute Graduate Student Conference***September 2022*

Presented ‘Black Hole Superradiance - Calculating the Frequency Drift of Gravitational Radiation’.

**TEACHING EXPERIENCE**

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- Perimeter Institute - Teaching Assistant for Strong Gravity course for PSI Masters students.
- Perimeter Institute - Teaching Assistant for Numerical Methods course for PSI Masters students.
- Perimeter Institute - Teaching Assistant for Gravitational Physics course for PSI Masters students.
- Perimeter Institute - Teaching Assistant for Relativity course for PSI Masters students.
- Perimeter Institute - Teaching Assistant for Classical Physics course for PSI Masters students.
- University of Waterloo - Teaching Assistant for Mechanics course for Undergraduate students.
- Trinity College Dublin - Teaching Assistant for Quantum Mechanics course for third year Undergraduate students.

- Trinity College Dublin - Teaching Assistant for Linear Algebra I and II courses for first year Undergraduate students.

## LEADERSHIP

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### Academic

*Sep 2017 - May 2024*

- Perimeter Institute - Organized and started a 'Beautiful Papers' journal club where each week a member of the group would lead a discussion on a significant paper in gravity.
- Perimeter Institute - Volunteered regularly to chair strong gravity group meetings

### Student Mentoring

*Sep 2017 - May 2024*

- Perimeter Institute - Volunteered to mentor a PSI Masters student for each academic year.
- Perimeter Institute - Volunteered and was elected to the graduate student committee (2023-2024). In this role I organised the graduate student conference, panel discussions and social events.
- Trinity College Dublin - Volunteered to work with first year Theoretical Physics students as a part of the the student to student mentoring program.
- Trinity College Dublin - Volunteered on College open days as student ambassador for Theoretical Physics.

### Outreach

*Sep 2017 - May 2024*

- Perimeter Institute - Volunteered for mentoring session with Highschool students interested in Physics through PI Outreach.
- Perimeter Institute - Led Q&A sessions with Highschool students visiting Perimeter.
- Perimeter Institute - Volunteer regularly for "Ask a Scientist" role to answer questions from the public before and after public talks hosted at Perimeter.

### Equity, Diversity and Inclusion

*Sep 2016 - Present*

- Perimeter Institute - Active Member of Women in Physics working group, organising social events, workshops and panel discussions.
- Trinity College Dublin - Founded and co-chaired the Trinity Women in STEM society.
- Trinity College Dublin - Delegate, Conference for Undergraduate Women in Physics, Oxford University.
- Organized and led youth clubs in Ireland and the UK, focusing on activism, equality and alternatives to violence. (2012-2018)