

Matthias Harksen

Currently pursuing a PhD degree in High Energy Physics at the University of Iceland.

Working title of thesis: "Quantum-gravitational thermodynamics of near-extremal non-Lorentzian Black Holes".

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Education

- **PhD** in High Energy Physics from the University of Iceland. Supervised by Watse Sybesma. 2022 - 2026
- **Upper Secondary School Teaching Diploma** from the University of Iceland. 2020 - 2021
- **Master of Science** in Mathematical and Theoretical Physics from the University of Oxford. 2019 - 2020
- **Bachelor of Science** in Mathematics from the University of Iceland. 2016 - 2019

Employment and other work

- **Team Leader for Iceland at the International Physics Olympiad** 2019 -
- **Organizer of the Icelandic Physics Olympiad** (for upper secondary school students). 2017 -
- **Physics teacher at Menntaskólinn í Reykjavík** (upper secondary school). 2018 - 2022

Scientific outreach

- **European Researchers' Night** [Family friendly booth on black holes with Jón Emil](#). 28.09.2024
- **The Icelandic Web of Science Article** [Is it possible to create a black hole in a research lab?](#) 27.09.2024
- **Public Lecture** [Black holes for the general public \(in Icelandic\)](#). 10.04.2024
- **Rannís ScienceSlam winner** [Competition between PhD students in presenting their research](#). 05.10.2023
- **European Researchers' Night** [Family friendly booth on black holes with Watse Sybesma](#). 01.10.2022
- **Teaching material for physics experiments:** [Physics experiments at home](#). 01.11.2021

Teaching

- **Introductory Physics for Upper Secondary School** (Teacher) ([see my textbook here](#)). 2018 - 2022
- **Quantum Mechanics I** (Teaching Assistant). Autumn 2024
- **Bachelor's Project Advisor** for Halla Emilía Ingólfssdóttir on "Vegið í sömu knérun". Spring 2024
- **Bachelor's Project Advisor** for Kristján Dagur Egilsson on "Hvenær á ég að kaupa hús?". Spring 2025
- **Electrodynamics I** (Teaching Assistant). Spring 2023-24
- **Physics I** (Teaching Assistant). Autumn 2021-22
- **Linear Algebra I** (Teaching Assistant). Autumn 2017

Publications and preprints

- **Carroll strings with an extended symmetry algebra** [JHEP 05 \(2024\) 206](#)
Matthias Harksen, Diego Hidalgo, Watse Sybesma, Lárus Thorlacius
- **The spectrum of a quantum Lifshitz black hole in two dimensions** [arXiv:2408.15336](#)
Matthias Harksen, Watse Sybesma **Accepted** for publication in JHEP
- **Silent Physics Animation Tasks for Learner Narration** ([preprint](#))
Bjarki Harksen, Matthias Harksen **Accepted** for publication in [IOP PE](#)