CV – MAX MELCHING

Personal Information

Email	maxm.melching@gmail.com
GitHub	MaxMelching
Website	https://maxmelching.github.io

Education

09/2025 – present — *PhD* (*Physics*) — California Institute of Technology

10/2022 – 05/2025 — *M.Sc.* (*Physics*) — Leibniz University Hannover

Final grade: 1,0 · Equivalent GPA: 4.0

Minor: Mathematics

10/2018 – 10/2022 — *B.Sc.* (*Physics*) — Leibniz University Hannover

Final grade: 1,0 (with honours) · Equivalent GPA: 4.0

Minor: Computer Science

Work Experience

10/2024 – 08/2025 — *Student Assistant* — Max Planck Institute for Gravitational Physics

Various tasks related to the Max Planck Leadnet, such as website development and maintenance, and organizational duties.

Reference: Frank Ohme · frank.ohme@aei.mpg.de

04/2023 – 07/2024 — *Student Research Assistant* — Institute for Quantum Optics, Hannover

Data analysis and software development for the Cold Atom Lab experiment onboard the ISS. Part of that was the development of a Python package that can be used to read, process and evaluate experimental data.

References: Naceur Gaaloul · gaaloul@iqo.uni-hannover.de, Gabriel Müller · g.mueller@iqo.uni-hannover.de

10/2021 – 02/2022 — *Student Assistant* — Leibniz University Hannover

I was one of the tutors for an introductory physics lecture for first-semester undergraduate students. Responsibilities included grading exercise sheets and exams, as well as teaching tutorials to part of the class.

Reference: Tammo Block · block@maphy.uni-hannover.de

Publications & Theses

11/2023 – 05/2025 — *Master Thesis* — Max Planck Institute for Gravitational Physics

Title: Systematic Errors in Gravitational Waveform Models

Description: Theoretical development and extension, as well as implementation, of tools in the Fisher matrix framework that aims at quantifying waveform systematics.

Supervisors: Frank Ohme · frank.ohme@aei.mpg.de, Krishnendu NV · krishnendu.nv@icts.res.in

DOI: 10.15488/19415

03/2022 – 10/2022 *Bachelor Thesis* Max Planck Institute for Gravitational Physics

Title: Systematic Differences in the Source Properties of the Third Gravitational-Wave Catalog

Description: Analysis of the posterior distributions of the third catalog of gravitational wave events, with an emphasis on waveform model systematics.

Supervisor: Frank Ohme · frank.ohme@aei.mpg.de

DOI: 10.15488/19414

Honours & Awards

2023/2024 Deutschlandstipendium · Leibniz University Hannover
(monthly stipend for two semesters)

2022/2023 Deutschlandstipendium · Leibniz University Hannover
(monthly stipend for two semesters)

2020 Niedersachsenstipendium · Leibniz University Hannover
(one-time payment stipend)

Other Information

Computer Skills

Advanced: Python, LaTeX, `git` (includes GitLab, GitHub), Jupyter

Intermediate: Linux, Mathematica, C, Microsoft Windows

Basic: `slurm`, `condor`, MATLAB, Microsoft Office

Presentations

09/2024 Poster "Using Correlations for Good – Systematic Errors Using Alignment" at the LIGO-Virgo-KAGRA Meeting in Barcelona (LIGO DCC: G2401544)

03/2024 Oral Presentation "Systematic Differences in the Source Properties Of Gravitational Wave Signals" at the DPG Spring Meeting of the German physical society, section Gravitation and Relativity

04/2024 Oral Presentation "Systematic Errors in Gravitational Waveform Models" at the DPG Spring Meeting of the German physical society, section Gravitation and Relativity

Personal

Languages: German (Native) · English (Full Working Proficiency)

August 20, 2025