

Institute for Theoretical Physics  
Philosophenweg 12,  
University of Heidelberg, Germany  
Heidelberg, 08/06/2025

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## Education & Position

08/2025 - present	<b>University of Heidelberg, Heidelberg, Germany</b> Postdoctoral Researcher at the Institute for Theoretical Physics
10/2021 - 07/2025	<b>University of Heidelberg, Heidelberg, Germany</b> PhD student in Theoretical Physics <b>Thesis:</b> Across the Horizon: On Gravitational Wave Flux Laws and Tests of Gravity (Summa Cum Laude) <b>Supervisor:</b> Prof. Lavinia Heisenberg
02/2019 - 06/2021	<b>Swiss Federal Institute of Technology (ETH Zurich), Zurich, Switzerland</b> Master of Science in Physics (with distinction) <b>Thesis:</b> 21cm signatures of Cosmic (super-)strings <b>Supervisor:</b> Prof. Robert Brandenberger
10/2015 - 10/2018	<b>Karlsruhe Institute of Technology, Karlsruhe, Germany</b> Bachelor of Science in Physics (with distinction) <b>Thesis:</b> Baryogenesis in singlet extensions of the standard model <b>Supervisor:</b> Prof. Milada M. Mühlleitner
10/2014 - 04/2018	<b>Karlsruhe Institute of Technology, Karlsruhe, Germany</b> Bachelor of Science in Industrial Engineering and Management <b>Thesis:</b> How intraday hedging affects option returns <b>Supervisor:</b> Prof. Marliese Uhrig-Homburg

## Grants & Awards

2024	<b>Exploratory Project - Modelling Dark Matter with Cold Atoms, Structures Cluster of Excellence</b> (~154.000 Euros)
2023	<b>Exploratory Project - Exploring Structure Formation through Gravitational Waves, Structures Cluster of Excellence</b> (~154.000 Euros)
2022 – 2023	<b>Travel Grant, Structures Cluster of Excellence</b> (~10.000 Euros)
02/2019 – 02/2021	<b>Full scholarship of the German Academic Exchange Service DAAD</b> (~35.000 Euros)

## Talks & Visits

05/2025	<b>LISA Community Call, online</b> (Invited Speaker)
02/2025	<b>Black Hole Mimickers: From Theory to Observation, Princeton Center for Theoretical Science, Princeton University</b> (Speaker)
07/2024	<b>15th International LISA Symposium, University of Dublin</b> (Speaker)
06/2024	<b>Academic Visit at ETH Zurich</b> (Group of Prof. Defenu)
04/2024	<b>SXS Collaboration Webinar, online</b> (Invited Speaker)
11/2023	<b>Short-Term Visitor, California Institute of Technology</b> (Group of Prof. Vallisneri)
11/2023	<b>CMB Constellation Seminar, KIPAC, Stanford</b> (Speaker)
11/2023	<b>INPA Seminar, LBNL, University of California, Berkeley</b> (Invited speaker)

10-12/2023	<b>Long-Term Visitor, KITP, University of California, Santa Barbara</b>
07/2023	<b>Quantum Gravity 2023 Conference, University of Nijmegen</b> (Invited speaker)
09/2022, 07/2022	<b>Academic Visit at ETH Zurich</b> (Group of Prof. Heisenberg)

## Peer-reviewed publications

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02/2025	<b>Signatures of Quantum Gravity in Gravitational Wave Memory</b> N. Deppe, L. Heisenberg, H. Inchauspé, L. E. Kidder, <b>D. Maibach</b> , <i>et al.</i> (Phys.Rev.D 112 (2025), 024016, arXiv:2502.20584) [project lead, main author overall]
10/2024	<b>Echos from Beyond: Detecting Gravitational Wave Quantum Imprints with LISA</b> N. Deppe, L. Heisenberg, H. Inchauspé, L. E. Kidder, <b>D. Maibach</b> , <i>et al.</i> (Phys.Rev.D 111 (2025), 124035, arXiv:2411.05645) [project lead, main author overall]
02/2024	<b>Testing gravitational waveforms in full General Relativity</b> F. D'Ambrosio, F. Gozzini, L. Heisenberg, H. Inchauspé, <b>D. Maibach</b> , J. Zosso (JCAP 02 (2025) 060, arXiv:2402.19397) [project lead, personal contribution: analysis and discussion]
02/2024	<b>Observing Kinematic Anisotropies of the Stochastic Background with LISA</b> L. Heisenberg, H. Inchauspé, <b>D. Maibach</b> (JCAP 01 (2025) 044, arXiv:2401.14849) [personal contribution: co-author overall]
09/2023	<b>Searching for Topological Dark Matter in LIGO data</b> L. Heisenberg, <b>D. Maibach</b> , D. Veske (Phys.Rev.D 110 (2024) 5, 055037, arXiv:2309.05093) [personal contribution: co-author overall]
07/2021	<b>Extracting the signal of cosmic string wakes from 21-cm observations</b> <b>D. Maibach</b> , R. Brandenberger, D. Crichton, A. Refregier (Phys.Rev.D 104 (2021), 123535, arXiv:2107.07289) [personal contribution: main author overall]

## Non-reviewed or in preparation

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01/2022	<b>Gravitational Waves in Full, Non-Linear General Relativity</b> F. D'Ambrosio, S. Fell, L. Heisenberg, <b>D. Maibach</b> , S. Zentarra, J. Zosso (arXiv:2201.11634, Review) [project lead, personal contribution: main author of chapters 5-8 & exercises]
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## PhD thesis and related work

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05/2025	<b>Across the Horizon: On Gravitational Wave Flux Laws and Tests of Gravity</b> <b>D. Maibach</b> (PhD thesis, arXiv:2506.06783)
-/2025	<b>Covariant Phase Space Approach Beyond General Relativity</b> <b>D. Maibach</b> , J. Zosso (ongoing project) [project lead, personal contribution: main author]

## Workshops & Schools

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11/2023	<b>Out-of-equilibrium Dynamics and Quantum Information of Many-body Systems with Long-range Interactions, KITP, University of California - Santa Barbara</b> (Workshop)
09/2023	<b>Advanced School of Asymptotically Flat Spacetime and Celestial Holography, University of Warsaw</b> (School)
08/2023	<b>YRC Workshop on Turbulence and Chaos, University of Heidelberg</b> (Workshop)
05/2023	<b>Dark Matter and Stars Conference, University of Lisbon</b> (Conference)
09/2022	<b>Gravity at Prague Summer School, University of Prague</b> (School)
08/2022	<b>YRC Workshop on Renormalization Group, University of Heidelberg</b> (Workshop)
05/2022	<b>String, Gravity and Cosmology Student Conference, University of Amsterdam</b> (Conference)

## Outreach

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01/2025	<b>Intellectual Pottery, Blog &amp; Podcast</b> (Host, <a href="https://intellectual-pottery.com/">https://intellectual-pottery.com/</a> [website under construction])
06/2024	<b>Minds of Science Podcast (Exploring life in academia in bringing research to a digestible level)</b> (Co-Host, <a href="https://mindsofscience.eu/">https://mindsofscience.eu/</a> [website under construction])
04/2022/23/24	<b>Girls' Day, organized by the University of Heidelberg</b> (Co-Organizer)
07/2023	<b>Speaker for "Academic lunch break", organized by the STRUCTURES Excellence Cluster</b> <b>Topic:</b> Fractal dimensions and their appearance in nature

## Teaching & Experience

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01/2025 - present	<b>Reviewer for Progress in Physics</b>
02/2024 - present	<b>IOP Trusted Reviewer</b>
10/2023	<b>51st Graduate Days, Heidelberg Graduate School for Physics</b> (Organizer)
09/2023 - present	<b>LISA Cosmology Working Group Member, LISA Consortium</b>
07/2023	<b>STRUCTURES Cluster of Excellence, STRUCTURES Days</b> (Organizer)
02/2023 - present	<b>Spokesperson for the Young Researcher Convent (YRC) of the STRUCTURES Excellence Cluster</b>
2022/23	<b>Joint Cosmology Seminar at the Institute for Theoretical Physics, University Heidelberg</b> (Organizer)
2019 – 2023	<b>Teaching assistant at ETH Zurich and University of Heidelberg</b> (General Relativity, Theoretical Physics III - Electrodynamics)

## skills

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<b>Language</b>	German: native language English: fluent (Toefl iBT certificate [2019]: 112/120) Spanish: entry level
<b>IT</b>	Python, Wolfram Mathematica
<b>Interests</b>	Surfing, Martial Arts, Programming, Natural Science