

# Marc Klinger

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## Education and Training

From 01/2020      **PhD in Theoretical Astroparticle Physics**  
DESY Zeuthen  
Expected end      Within the [Helmholtz Weizmann Research School on Multimessenger Astronomy](#)  
in spring 2024      Supervisors: Walter Winter, Andrew Taylor, Eli Waxman  
Focus: *Time-Dependent Radiation Modeling of Gamma-Ray Burst Afterglows*

- Reduced analytical afterglow modelling
- Time-dependent afterglow modelling of gamma-ray bursts
- Development, maintenance and publication of the [AM<sup>3</sup> code](#)
- Counts-level fits from keV-TeV energies

12/2019      **Master of Science in Physics** with distinction  
Focus: Astroparticle Physics and Cosmology  
RWTH Aachen University  
Supervisors: Thomas Bretz, Philipp Mertsch  
Thesis: *Developing a Magnetic Reconnection Model to Interpret Blazar Variability as Measured with the FACT Telescope*

10/2016      **Bachelor of Science in Physics** with distinction  
RWTH Aachen University  
Supervisor: Christopher Wiebusch  
Thesis: *Development of a measurement setup to compare acoustic emitters for the EnEx-RANGE project*

## Work and Research Experience

05/2017 - 02/2019      **Assistant Scientist at EnEx RANGE Project at RWTH Aachen**  
Focus: Experimental lab work and data analysis  
Glacier expedition for project validation (08/2017)

02/2017 - 03/2017      **Site visit of Pierre-Auger-Observatory, Argentina**  
Participation in maintenance, shifts, collaboration meeting and public outreach work at the local visitor's facility

09/2016 - 12/2016      **Scientific stay at the HAWC Observatory, Mexico**  
Studies on Radio Galaxies at the National Autonomous University of Mexico (UNAM)  
Participation in the *HAWC Collaboration Meeting* and the *Workshop on a wide field-of-view Southern Hemisphere TeV gamma ray observatory*

## Selected Talks

24/10/2023	<b>Plenary: High Energy Phenomena in Relativistic Outflows (HEPRO)</b> Lepto-Hadronic Very-High-Energy GRB Afterglows
10/01/2023	<b>Invited: Transient Tuesday, Niels Bohr Institute, Copenhagen (online)</b> VHE GRB Afterglows: A story about Bactrians, Dromedaries and lots of Butterflies
16/05/2022 18/05/2022	<b>Talks at the Harnack-Haus GRB Workshop Berlin</b> <ul style="list-style-type: none"><li>• One Zone Basics and Effective Descriptions</li><li>• Multi-wavelength Fitting at the Counts Level</li></ul>
27/10/2021	<b>TeVPA 2021 (online due to Covid)</b> Understanding the Spectrum of Gamma-Ray Burst 190114C
26/03/2019	<b>Spring Meeting of German Physical Society</b> FACT - Spectral variability of TeV-blazars

## Awards

12/2020	<b>Financial Performance Bonus for Active and Excellent Engagement in Research Discussions</b> Deutsches Elektronen-Synchrotron (DESY)
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## Teaching Experience

07/2023 - 09/2023	<b>DESY Summer student program</b> Supervision of 3 summer student projects on GRB afterglow modeling
07/2022 - 09/2022	
10/2020 - 02/2021	<b>Mathematical Tools for a Physicist at Humboldt University</b> Preparation and discussion of weekly exercise sheets

## Outreach

02/2022	<b>Workshop on Outreach Skills</b> 3-day workshop of the German network of (Astro)particle physics outreach
2023, 2022, 2021	<b>International Cosmic Day</b> Talk and supervision of a cosmic-ray experiment in school
2018 - 2020	<b>AIS<sup>3</sup> - Astroparticle Immersive Synthesizer<sup>3</sup></b> Construction and Maintenance of <a href="#">AIS<sup>3</sup></a> with Tim Otto Roth in Berlin (08-09/2018), Munich (02/2019) and Aachen (fall 2019) including outreach talks for school classes

## Special Qualifications

<b>Computer Skills</b>	Python, C++ LaTeX, Microsoft Office (Excel, Word, PowerPoint), Markdown, GIT	
<b>Languages</b>	German ( <i>mother tongue</i> ) English ( <i>fluent</i> )	Spanish ( <i>advanced</i> ) Dutch ( <i>basic</i> )

## List of Publications

- 2023 **Flat Gamma-Ray Burst Afterglow Spectra up to Very-High Energies**  
M. Klinger, C Yuan, A. M. Taylor and W. Winter (in prep.)
- 2023 **AM<sup>3</sup>: An open-source tool for time-dependent lepto-hadronic modelling of astrophysical sources** - M. Klinger, et al. (software, [arXiv: 2312.13371](https://arxiv.org/abs/2312.13371))
- 2023 **The promise of Gamma-Ray Bursts at TeV energies**  
B. Reville et al. (review, in prep.)  
**My contribution: Summary section on GRB afterglow modelling and GRB 190114C**
- 2023 **The Multiwavelength Picture of GRB 221009A's Afterglow**  
M. Klinger, A. M. Taylor, T. Parsotan, et al. (MNRAS Letters accepted, [arXiv:2308.13854](https://arxiv.org/abs/2308.13854))
- 2023 **Probing the multiwavelength emission scenario of GRB 190114C**  
M. Klinger, D. Tak, A. M. Taylor and S. J. Zhu ([MNRAS 520 1](https://arxiv.org/abs/2308.13854))
- 2020 **FACT - Probing the Periodicity of Mrk 421 and Mrk 501**  
M. Klinger, M. Beck and F. Theißen on behalf of the FACT collaboration (ICRC proceeding)
- 2017 **Observation of radio galaxies with HAWC**  
D. Avila, R. Alfaro, A. Galván, M.M. González, N. Fraija and M. Klinger on behalf of the HAWC Collaboration (ICRC proceeding)

## Appendix

### Additional Talks

28/11/2023	<b>SPIMAX Seminar, Oxford</b> On the camel nature of GRB afterglows
30/06/2023	<b>Gamma Group Seminar, DESY Zeuthen</b> GRB 221009A: Afterglow spectrum
21/02/2023	<b>DESY Astroparticle division retreat, Potsdam, Germany</b> Intro-slides for critical review discussion on transients (with R. Konno)
26/01/2023	<b>Science Club of Multimessenger School (online, incl. Weizmann Institute, Israel)</b> Weizsäcker-Williams Approach
18/11/2022	<b>Invited: Astroparticle Seminar at DESY, Zeuthen</b> VHE GRB Afterglows: A story about Bactrians, Dromedaries and lots of Butterflies
23/09/2021	<b>DESY Theory Workshop: Bright ideas for a dark universe (online due to Covid)</b> Understanding the Spectrum of Gamma-Ray Burst 190114C
22/04/2021	<b>Science Club of Multimessenger School (online, incl. Weizmann Institute, Israel)</b> Relativistic Shocks

### Additional Intercultural and International Experience

From 01/2020	<b>International Helmholtz-Weizmann Research School for Multimessenger Astronomy</b>
08/2019	<b>Workshop on intercultural communication (2 days)</b> Combining theoretical concepts with practical application to train the ability to detect and resolve intercultural communicational problems
11/2018	<b>German Italian Physics Exchange (GIPE) to Trieste, Italy (4 days)</b>
10/2018 - 03/2019	<b>Mentoring of international master students in Aachen</b>
04/2016 - 09/2016	<b>Support of a Spanish exchange student in Aachen (BeBuddy)</b>
11/2014	<b>Intercultural training (2 days)</b>
06/2012 - 08/2012	<b>School exchange to Instituto de Ballester, Buenos Aires, Argentina</b>