

ROBERT STEIN

CURRICULUM VITAE

PERSONAL DATA

PLACE AND DATE OF BIRTH: London | 10 June 1995
CITIZENSHIP: British & Irish
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EDUCATION

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| JULY 2017 –
SEP. 2021 | PhD in EXPERIMENTAL PHYSICS,
Humboldt University of Berlin / DESY Zeuthen
Thesis: “ <i>Search for multi-messenger transients with IceCube and ZTF</i> ”
(in prep.)
Research Advisor: A. FRANCKOWIAK
<ul style="list-style-type: none">• Cross-correlation of neutrinos with multi-wavelength catalogues• Led response to neutrino alerts as the <i>IceCube realtime shifter</i>• ZTF follow-up of neutrino/gravitational wave/GRB events |
| SEP. 2013 –
JUNE 2017 | MSci in PHYSICS WITH A YEAR IN EUROPE,
Imperial College London / University of Hamburg
Thesis: “ <i>Reconstruction of Charge Number of Heavy Cosmic Rays using Cherenkov Light</i> ”
Research Advisor: D. HORNS (University of Hamburg)
Graduated with First Class Honours
<ul style="list-style-type: none">• Development of novel reconstruction method for heavy cosmic rays detected by IACTs, using direct Cherenkov light• Estimates of performance for simulated CTA geometries |

SELECTED TALKS

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| 13 TH JULY 2021 | INVITED PLENARY HIGHLIGHT TALK, 37 th International Cosmic Ray Conference (ICRC), Berlin, DE
“ <i>A tidal disruption event coincident with a high-energy neutrino</i> ” |
| 6 TH JULY 2021 | INVITED TALK, AIRUB science seminar, Bochum, DE
“ <i>Neutrinos from shredded stars</i> ” |
| 29 TH JUNE 2021 | INVITED TALK, European Astronomical Society, Leiden, NL
“ <i>Neutrinos from tidal disruption events</i> ” |
| 14 TH JUNE 2021 | INVITED TALK, LIGO-GRITTS Seminar, MIT/Caltech, USA
“ <i>A tidal disruption event coincident with a high-energy neutrino</i> ” |

10 TH DEC. 2020	INVITED TALK, Cosmic Rays and Neutrinos in the Multi-Messenger Era, Paris, FR “ <i>Neutrinos from tidal disruption events</i> ”
14 TH OCT. 2020	INVITED TALK, ASTRON Astrolunch, Dwingeloo, NL “ <i>A high-energy neutrino coincident with a tidal disruption event</i> ”
25 TH AUG. 2020	INVITED TALK, NASA GSFC ASD Colloquium, Greenbelt, USA “ <i>A high-energy neutrino coincident with a tidal disruption event</i> ”
5 TH JUNE 2020	INVITED TALK, DESY Astroparticle Seminar, Zeuthen, DE “ <i>A high-energy neutrino coincident with a tidal disruption event</i> ”
26 TH OCT. 2019	INVITED TALK, PAHEN Conference, Berlin, DE “ <i>Neutrinos from optical transients with IceCube</i> ”
30 TH JULY 2018	INVITED TALK, ESO Thirty Minute Talk, Santiago, CL “ <i>ZTF and the AMPEL Broker: Providing a realtime public astronomy survey</i> ”

SCHOLARSHIPS, AWARDS AND HONOURS

26 TH MAR 2021	Winner of the <i>IceCube Impact Award</i> , IceCube Spring 2021 Collaboration Meeting
2 ND JULY 2020	Winner of first session poster competition, Neutrino 2020 Conference
16 TH OCT 2019	Winner of the annual DESY Science Slam, DESY Hamburg
21 ST NOV 2018	Winner of the annual Zeuthen Science Slam, DESY Zeuthen

SELECTED TELESCOPE TIME AWARDED

SEP. 2021 – MAR. 2022	Nordic Optical Telescope (NOT) Program (Co-I) <i>Spectroscopic follow-up of candidate counterparts to IceCube high-energy neutrinos</i>
FEB. 2021 – FEB. 2022	Gemini Program (Co-I) <i>Spectroscopic classification of potential neutrino counterparts identified by ZTF</i>
OCT. 2020 – MAR. 2021	Australia Telescope Compact Array Program (Co-I) <i>Radio emission from stellar tidal disruption flares</i>
SEP. 2020 – FEB. 2021	Gran Telescopio Canarias Program (Co-I) <i>Spectroscopic classification of potential neutrino counterparts identified by ZTF</i>
JUNE 2020 – SEP. 2020	Very Large Array DDT Program (PI) <i>VLA observations to establish the neutrino counterpart to a giant AGN flare</i>

SUPERVISION, TEACHING AND OUTREACH

OCT. 2019 – OCT. 2020	Supervision of master's degree student: J. NECKER <i>Search for high-energy neutrinos from core-collapse supernovae</i>
SEP. 2019 – SEP. 2020	Supervision of master's degree student: R. NAAB <i>The next-generation Optical Follow-Up (OFU) program for IceCube</i>
OCT 2018 – AUG. 2019	Supervision of bachelor's degree student: A. VAGTS <i>Investigation of the TXS 0506+056 neutrino spectrum</i>

JUNE 2018 – JULY 2019	Teaching Assistant: <i>Experimental Astroparticle Physics</i> (2 semesters)
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OCT. 2018 – NOV. 2019	Volunteer: <i>International Cosmic Day</i> (2 years)
JUNE 2018 – JUNE 2019	Volunteer: <i>Lange Nacht der Wissenschaft</i> (2 years)
MARCH 2018	Co-organisier: <i>IceCube Masterclass</i>

ADDITIONAL INFORMATION

Collaboration Membership	IceCube, ZTF, GROWTH, LSST-TVSSC
Programming Skills:	Python, L ^A T _E X, Bash (Advanced)
Language Skills:	English (Native Speaker), German (Advanced - C1)

SELECTED PUBLICATIONS (*PEER-REVIEWED)

- 2021 S. REUSCH ET AL., *Observations of bright nuclear transient AT2019fdr coincident with high-energy neutrino IceCube-200530A*, (in prep.)
Realtime follow-up and data analysis, statistical analysis, contributed radio data
- *R. STEIN et al., *A tidal disruption event neutrino coincident with a high-energy neutrino* 2021, Nat.Astron., 5, 510-518
Developed analysis framework, led follow-up program, modelling, statistical analysis
- *M. M. KASLIWAL et al., *Kilonova Luminosity Function Constraints based on Zwicky Transient Facility searches for 13 Neutron Star Mergers* 2020, ApJ, 905, 145
Developed one of three analysis frameworks, realtime follow-up and data analysis
- 2020 *V. PALIYA et al., *Multi-Frequency Observations of the Candidate Neutrino Emitting Blazar BZB J0955+3551* 2020, ApJ, 902, 29
Statistical analysis of chance coincidence probability, led neutrino data analysis
- *A. FRANCKOWIAK et al., *Patterns in the multi-wavelength behaviour of candidate neutrino blazars* 2020, ApJ, 893, 162
Contributed to the discussion and interpretation of neutrino correlation
- *S. VAN VELZEN et al., *Seventeen Tidal Disruption Events from the First Half of ZTF Survey Observations: Entering a New Era of Population Studies* 2021, ApJ, 908, 4
Technical implementation of filtering and analysis pipeline, code development
- 2019 R. STEIN FOR THE ICECUBE COLLABORATION, *Search for Neutrinos from Populations of Optical Transients*, PoS(ICRC2019)1016
Developed likelihood analysis code, TDE catalogue compilation, data analysis

SELECTED SOFTWARE

- 2020 R. STEIN ET AL., *Ampel Follow-up Pipeline*, DOI: [10.5281/zenodo.4048335](https://doi.org/10.5281/zenodo.4048335)
Python code for ZTF data analysis, built using the AMPEL framework. Primarily used for neutrino, gravitational wave and gamma-ray burst searches.
- R. STEIN ET AL., *Flarestack*, DOI: [10.5281/zenodo.3619383](https://doi.org/10.5281/zenodo.3619383)
Likelihood analysis python code for neutrino data analysis, as well as for neutrino population and cosmology calculations