

EMANUEL MALEK – CV

Date of Birth: 11th April 1989

Nationality: Germany

Humboldt-Universität zu Berlin,

Institut für Physik,

Zum Großen Windkanal 2,

12489 Berlin, Germany

POSITIONS

- Aug. 2020 – ongoing **Emmy Noether Junior Research Group Leader**,
Humboldt-Universität zu Berlin, Germany
- Sep. 2018 – Jul. 2020 **Postdoc**,
Max-Planck-Institut für Gravitationsphysik (Albert Einstein Institute),
Potsdam, Germany
- Sep. 2015 – Sep. 2018 **Postdoc**,
Ludwig-Maximilians-Universität München, Germany
- Aug. 2014 – Aug. 2015 **Postdoc**,
University of Cape Town, South Africa

EDUCATION

- Oct. 2010 – Jun. 2014 **DAMTP, University of Cambridge**, United Kingdom
Ph.D. Theoretical Physics
Thesis: *Duality Invariant Formulations of String and M-theory*,
Supervisor: Prof. Malcolm Perry
- Oct. 2009 – Jun. 2010 **University of Cambridge**, United Kingdom
Master of Mathematics (Part III), **Distinction**
- Oct. 2006 – Jun. 2009 **University of Cambridge**, United Kingdom
Bachelor of Arts, Natural Sciences, **1st Class Honours**,
ranked **4th out of 120** in final year, **8th out of 543** in second year

AWARDS, FELLOWSHIPS AND GRANTS

- 2022 Tremplin-ERC Grant (€113,000) from the French Research Foundation (ANR) to fund a postdoctoral position at LPTHE, Paris. Awarded due to having scored an “A” at Step 2 of ERC Starting Grant 2021
- 2021 Co-PI of Research Training Group (€4,620,000) from the German Research Foundation (DFG)
- 2020 Einstein International Postdoctoral Fellowship Grant (€525,000) from the Einstein Foundation Berlin
- 2020 Emmy Noether Research Group (€1,230,000) from the German Research Foundation (DFG)
- 2015 – 2017 CONICET Fellowship from the Argentinian Research Council, declined
- 2010 – 2014 Peterhouse Research Studentship for PhD studies
- 2011 Smith-Knight and Rayleigh-Knight Essay Prize
- 2007 – 2010 5 College Prizes and 3 Scholarships for excellent exam performance

PUBLICATIONS

Peer-reviewed papers and preprints

M. Galli and **E. Malek**,

Consistent truncations to 3-dimensional supergravity,

arXiv:2206.03507, JHEP 09 (2022) 014,

1 citations.

A. S. Arvanitakis, **E. Malek** and D. Tennyson,

Romans massive QP manifolds,

arXiv:2201.07807, Universe 8 (2022) 3, 147,

0 citations.

A. Giambrone, A. Guarino, **E. Malek**, H. Samtleben, C. Sterckx and M. Trigiante,

Holographic Evidence for Non-Supersymmetric Conformal Manifolds,

arXiv:2112.11966, Phys.Rev.D 105 (2022) 6, 066018,

6 citations.

G. Josse, **E. Malek**, M. Petrini and D. Waldram,

The higher-dimensional origin of five-dimensional $\mathcal{N} = 2$ gauged supergravities,

arXiv:2112.03931, JHEP 06 (2022) 003,

4 citations.

A. Giambrone, **E. Malek**, H. Samtleben and M. Trigiante,

Global Properties of the Conformal Manifold for S-Fold Backgrounds,

arXiv:2103.10797, JHEP 06 (2021) 111,

16 citations.

E. Malek, and V. Vall Camell,

Consistent truncations around half-maximal AdS_5 vacua of 11-dimensional supergravity,

arXiv:2012.15601, Class.Quant.Grav. 39 (2022) 7, 075026,

6 citations.

N. Bobev, **E. Malek**, B. Robinson, H. Samtleben and J. van Muiden,

Kaluza-Klein Spectroscopy for the Leigh-Strassler SCFT,

arXiv:2012.07089, JHEP 04 (2021) 208,

9 citations.

A. Guarino, **E. Malek** and H. Samtleben,

Stable non-supersymmetric Anti-de Sitter vacua of massive IIA supergravity,

arXiv:2011.06600, Phys. Rev. Lett. 126 (2021) no. 6, 061601,

30 citations.

E. Malek and H. Samtleben,

Kaluza-Klein Spectrometry from Exceptional Field Theory,

arXiv:2009.03347, Phys. Rev. D 102 (2020) 10, 106016,

28 citations.

E. Malek, D. C. Thompson and Y. Sakatani,

$E_{6(6)}$ Exceptional Drinfel'd Algebras,

arXiv:2007.08510, JHEP 01 (2021) 020,

19 citations.

- E. Malek**, H. Nicolai and H. Samtleben,
Tachyonic Kaluza-Klein modes and the AdS swampland conjecture,
arXiv:2005.07713, JHEP 08 (2020) 159,
27 citations.
- E. Malek** and H. Samtleben,
Kaluza-Klein Spectrometry for Supergravity,
arXiv:1911.12640, Phys. Rev. Lett. 124 (2020) no. 10, 101601,
42 citations.
- E. Malek** and D. C. Thompson,
Poisson-Lie U-duality in Exceptional Field Theory,
arXiv:1911.07833, JHEP 2004 (2020) 058,
30 citations.
- D. Lüst, **E. Malek**, E. Plauschinn and M. Syväri,
Open-String Non-Associativity in an R-flux Background,
arXiv:1903.05581, JHEP 2005 (2020) 157,
5 citations.
- E. Malek**, H. Samtleben and V. Vall Camell,
Supersymmetric AdS₇ and AdS₆ vacua and their consistent truncations with vector multiplets,
arXiv:1901.11039, JHEP 1904 (2019) 088,
31 citations.
- E. Malek**, H. Samtleben and V. Vall Camell,
Supersymmetric AdS₇ and AdS₆ vacua and their minimal consistent truncations from exceptional field theory,
arXiv:1808.05597, Phys. Lett. B 786 (2018) 171 - 179,
48 citations.
- R. Klein, **E. Malek**, D. Roest and D. Stefanyszyn,
A No-go Theorem for a Gauge Vector as a Space-time Goldstone,
arXiv:1806.06862, Phys. Rev. D 98 (2018) 065001,
14 citations.
- C. D. A. Blair, **E. Malek** and D. C. Thompson,
O-folds: Orientifolds and Orbifolds in Exceptional Field Theory,
arXiv:1805.04524, JHEP 1809 (2018) 157,
13 citations.
- D. Lüst, **E. Malek** and M. Syväri,
Locally non-geometric fluxes and missing momenta in M-theory,
arXiv:1710.05919, JHEP 1801 (2018) 050,
13 citations.
- E. Malek** and H. Samtleben,
Ten-dimensional origin of Minkowski vacua in $\mathcal{N} = 8$ supergravity,
arXiv:1710.02163, Phys. Lett. B 776 (2018) 65 - 71,
11 citations.

E. Malek,

Half-maximal supersymmetry from exceptional field theory,
arXiv:1707.00714, Fortsch. Phys. 65 (2017) No. 10-11, 1700061,
55 citations.

D. Lüst, **E. Malek** and R. J. Szabo,

Non-geometric Kaluza-Klein monopoles and magnetic duals of M-theory R-flux backgrounds,
arXiv:1705.09639, JHEP 1710 (2017) 144,
15 citations.

E. Malek,

7-dimensional $\mathcal{N} = 2$ Consistent Truncations using $SL(5)$ Exceptional Field Theory,
arXiv:1612.01692, JHEP 1706 (2017) 026,
29 citations.

E. Malek,

From Exceptional Field Theory to Heterotic Double Field Theory via $K3$,
arXiv:1612.01990, JHEP 1703 (2017) 057,
23 citations.

M. Günaydin, D. Lüst and **E. Malek,**

Non-associativity in non-geometric string and M-theory backgrounds, the algebra of octonions and missing momentum modes,
arXiv:1607.06474, JHEP 1611 (2016) 027,
32 citations.

P. du Bosque, F. Hassler, D. Lüst and **E. Malek,**

A geometric formulation of exceptional field theory,
arXiv:1605.00385, JHEP 1703 (2017) 004,
11 citations.

D. S. Berman, C. D. A. Blair, **E. Malek** and F. J. Rudolph,

An Action for F-theory: $SL(2) \times \mathbb{R}^+$ Exceptional Field Theory,
arXiv:1512.06115, Class. Quant. Grav. 33 (2016) 195009,
58 citations.

E. Malek and H. Samtleben,

Dualising consistent IIA/IIB truncations,
arXiv:1510.03433, JHEP 1512 (2015) 029,
39 citations.

E. Malek, J. Murugan and J. P. Shock,

The Information Metric on the moduli space of instantons with global symmetries,
arXiv:1507.08894, Phys. Lett. B 753 (2016) 660 - 663,
5 citations.

C. D. A. Blair and **E. Malek,**

Geometry and fluxes of $SL(5)$ exceptional field theory,
arXiv:1412.0635, JHEP 1503 (2015) 144,
91 citations.

C. D. A. Blair, **E. Malek** and J.-H. Park,
M-theory and Type IIB from a Duality Manifest Action,
arXiv:1311.5109, JHEP 1401 (2014) 172,
83 citations.

C. D. A. Blair, **E. Malek** and A. J. Routh,
An $O(D,D)$ Invariant Hamiltonian Formulation for the Superstring,
arXiv:1308.4828, Class. Quant. Grav. 31 (2014) 205011,
38 citations.

D. S. Berman, C. D. A. Blair, **E. Malek** and M. J. Perry,
The $O_{D,D}$ Geometry of String Theory,
arXiv:1306.6727, Int. J. Mod. Phys. A 29 (2014) No. 15, 1450080,
81 citations.

E. Malek,
Timelike U-dualities in Generalised Geometry,
arXiv:1301.0543, JHEP 1311 (2013) 185,
34 citations.

E. Malek,
U-Dualities in Three and Four Dimensions,
arXiv:1205.6403, Int. J. Mod. Phys. A 32 (2017) No. 27, 1750169,
38 citations.

Conference proceedings and lecture notes

E. Malek,
Topology and geometry for physicists,
PoS Modave2017 (2018) 002.
Lectures given at the “13th Modave Summer School in Mathematical Physics”, September 2017, Belgium.

E. Malek,
Half-maximal consistent truncations using exceptional field theory,
arXiv:1710.00297, PoS CORFU2016 (2017) 125.
Presented at the “Workshop on Geometry and Physics”, November 2016, Ringberg Castle, Germany.

E. Malek,
Dualising consistent truncations,
arXiv:1512.09061, Fortsch. Phys. 64 (2016) 385-388.
Presented at “The String Theory Universe”, September 2015, KU Leuven, Belgium.

INVITED TALKS

Conference talks

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| Apr. 2023 (upcoming) | <i>Supergravity, Generalized Geometry and Ricci Flow</i> ,
Simons Center for Geometry and Physics, USA |
| Dec. 2022 (upcoming) | <i>Athens Christmas Conference</i> ,
Athens, Greece |
| Oct. 2022 (upcoming) | <i>5d $N=1$ SCFTs and Gauge Theories on Brane Webs</i> ,
Simons Center for Geometry and Physics, USA |

Jun. 2022 *Mini-Symposium on Geometry and Physics,*
 Zagreb, Croatia

Apr. 2022 *Eurostrings,*
 Lyon, France

Jan. 2022 *Geometry and Swampland,*
 Banff International Research Station, Canada

Sep. 2021 *Workshop on New Developments in Quantum Gravity and String Theory,*
 Corfu, Greece

Sep. 2019 *Workshop on Recent Developments in Strings and Gravity,*
 Corfu, Greece

Jun. 2019 *Integrability, duality and beyond,*
 Santiago de Compostela, Spain

May 2019 *Holography, Generalized Geometry and Duality,*
 Mainz Institute for Theoretical Physics, Germany

Feb. 2019 *Double field theory: progress and applications,*
 University of Cape Town, South Africa

Sep. 2018 *String Theory, Geometry and String Model Building,*
 Mainz Institute for Theoretical Physics, Germany

Sep. 2018 *Dualities and Generalized Geometries,*
 Corfu, Greece

Jul. 2018 *Workshop on Geometry and Strings,*
 Ringberg Caste, Germany

May 2018 *Workshop on Strings and Black Holes,*
 Utah State University, USA

Apr. 2018 *Exceptional Quantum Gravity,*
 Mallorca, Spain

Jan. 2018 *String Dualities and Geometry,*
 Centro Atomico Bariloche, Argentina

Sep. 2017 *Multi Facets of Extended Duality,*
 Institute for Basic Sciences, Seoul, South Korea

Jun. 2017 *Recent Advances in T/U-dualities and Generalized Geometries,*
 Zagreb, Croatia

Apr. 2017 *Noncommutativity and Physics: Quantum Spacetime Structures,*
 Bayrischzell, Germany

Jan. 2017 *String and M-theory geometries: Double Field Theory, Exceptional Field*
Theory and their Applications,
 Banff International Research Station, Canada

Nov. 2016 *Workshop on Geometry and Physics,*
 Schloss Ringberg, Germany

May 2016 *Generalized Geometry & T-duality,*
 Simons Center for Geometry and Physics, USA

Feb. 2016 *Duality and Novel Geometry in M-theory,*
 APCTP, Postech, South Korea

Aug. 2015 *Duality Symmetries in String and M-theories,*
 CERN, Switzerland

Invited seminars

Nov. 2022 (upcoming)	Physics Colloquium, University of Duisburg-Essen, Germany
Oct. 2022 (upcoming)	Chicago University, USA
Jan. 2022	Paris Joint String Theory Seminar (“Rencontres théoriciennes”), France
Nov. 2021	University of Padova, Italy
Nov. 2021	Imperial College London, United Kingdom
Apr. 2021	QFT Colloquium, Humboldt-Universität zu Berlin, Germany
Mar. 2021	IRIS Colloquium Berlin, Germany
Mar. 2021	University of Michigan, USA
Mar. 2021	National and Kapodistrian University of Athens, Greece
Mar. 2021	Kolleg Mathematik Physik Berlin
Apr. 2020	Hamburg University, Germany
Apr. 2020	Exceptional Geometry Seminar (International Virtual Seminar Series)
Mar. 2020	KU Leuven, Belgium
Oct. 2019	UCLA, USA
Apr. 2019	Swansea University, United Kingdom
Jan. 2019	University of Vienna, Austria
May 2018	Imperial College London, United Kingdom
Nov. 2017	University of Padova, Italy
Jun. 2017	University of Groningen, Netherlands
May 2017	DAMTP, University of Cambridge, United Kingdom
May 2017	Vrije Universiteit Brussels (VUB), Belgium
Dec. 2016	University of Edinburgh, United Kingdom
Sep. 2016	ENS Lyon, France
Aug. 2016	IAFE Buenos Aires, Argentina
Jun. 2015	University of Witwatersrand, South Africa
Oct. 2014	Max Planck Institute for Physics Munich, Germany
Oct. 2013	University of Liverpool, United Kingdom

TEACHING AND SUPERVISING EXPERIENCE

Lecturing experience

2021 – 2022	Introduction to String Theory, Humboldt-Universität zu Berlin, Master’s & PhD course
Jul. 2022 & 2021	String Theory, Hamburg International Summer School on Particles, Strings & Cosmology, Advanced undergraduate course
2020 – 2021	Introduction to String Theory, Humboldt-Universität zu Berlin, Master’s & PhD course
Sep. 2017	Topology and geometry for physicists, XIII Modave Summer School in Mathematical Physics, PhD course
2014 – 2015	Complex Geometry and Calabi-Yau Manifolds, University of Cape Town, Graduate course

Teaching Assistant

2015 – 2016	Quantum Chromodynamics , LMU Munich, Master's course
2013 – 2014	Part III Quantum Field Theory , University of Cambridge, Master's course
2010 – 2011	Part III String Theory , University of Cambridge, Master's course
2010 – 2014	Part II Electrodynamics , University of Cambridge, Final year undergraduate course
2012 – 2013	Part II General Relativity , University of Cambridge, Final year undergraduate course
2010 – 2014	Part IB Maths for Natural Sciences , University of Cambridge, Second year undergraduate course

Didactic Training

Aug. 2019 – Mar. 2021	International Teaching Professionals Programme , Potsdam University
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Research & Bachelor students

2020 – ongoing	Michele Galli, PhD student Thesis: Flux Vacua in String Theory Main supervisor
2020 – 2021	Mattia Bocchi, PhD student Thesis: Flux Vacua in String Theory Main supervisor
2021 – ongoing	Moritz Kade, PhD student Thesis: Exact Solutions of Integrable Fishnet Models Co-supervisor (with Matthias Staudacher)
2018 – 2021	Marc Syväri, PhD student Thesis: Exceptional Field Theory and Machine Learning in Physics Graduated <i>Summa Cum Laude</i> , highest distinction in Germany Co-supervisor (with Dieter Lüst, Sven Krippendorf)
2016 – 2018	Marc Syväri, Master's student Thesis: Non-Geometric Fluxes from Exceptional Field Theory Co-supervisor (with Dieter Lüst)
2022 – ongoing	Leonard Neumann, Bachelor student Thesis: Supersymmetric Quantum Mechanics Main supervisor

Postdocs

Sep. 2022 – ongoing	Grégoire Josse, 3-year postdoc
Jun. 2022 – ongoing	Achilleas Passias, 2-year postdoc
Sep. 2021 – ongoing	Georgios Itsios, 5-year postdoc

SERVICES TO THE COMMUNITY

Membership of Steering Councils

Jan. 2021 – ongoing Deputy Director, *Interdisciplinary Center for Research in Mathematical Physics*, Humboldt-Universität zu Berlin

Membership of Collaborative Research Networks

Jan. 2021 – ongoing Junior Member, *Integrative Research Institute for the Sciences*, Humboldt-Universität zu Berlin

Jan. 2020 – ongoing Member, *Interdisciplinary Center for Research in Mathematical Physics*, Humboldt-Universität zu Berlin

Conferences and Summer Schools organised

Jan. 2023 (upcoming) *Higher structures, Gravity and Fields*,
Mainz Institute for Theoretical Physics, Germany

Sep. 2022 *Future Prospects in Duality, Geometry and Holography Workshop*,
Swansea University, United Kingdom

Aug. 2021 *Summer School on Integrability and Duality*,
Santiago de Compostela, Spain

Dec. 2019 *Geometry and Duality Conference*,
Max-Planck-Institut für Gravitationsphysik, Germany

Dec. 2014 *Frontiers of the AdS/CMT correspondence Conference*,
University of Cape Town, South Africa

Seminar series organised

Apr. 2020 – ongoing *Exceptional Geometry Seminar Series*,
Virtual Seminar Series

Dec. 2018 – Jul. 2020 *Quantum Gravity and Unified Theories Seminar Series*,
Max-Planck-Institut für Gravitationsphysik, Germany

Referee for 11 international journals *Physical Review Letters, Journal of High Energy Physics, Physics Letters B, Physical Review D, Nuclear Physics B, Classical and Quantum Gravity, IOP Journal of Physics A: Mathematical and Theoretical, European Physical Journal C, SciPost Physics, Universe, Symmetries*

Referee for funding agencies *ERC (HORIZON Europe), German Research Foundation (DFG), FONDECYT Chile*

OUTREACH ACTIVITIES

Talks for general public

Feb. 2020 “*Stringtheorie, Kompaktifizierungen und unser Universum*” (in German),
Bruno H. Bürgel astronomical observatory, Berlin

Nov. 2013 “*Why small circles and big circles are the same*”,
Peterhouse Graduate Symposium, Cambridge

Social Media content for general public

Jul. 2022 *Non-Standard Models: Extra Dimensions*, YouTube video

Outreach publications

- 2020 *The Singularity Theorem (Nobel Prize in Physics 2020)*, Online article,
<https://www.einstein-online.info/en/spotlight/the-singularity-theorem/>
- 2016 *Creating Cathedrals, The maths behind arches and cathedrals*,
Poster for outreach event, <http://www.emanuelmalek.com/Cathedrals.pdf>

Volunteering

- 2016 – 2019 *Maths circles*,
University of Edinburgh
- Oct. 2013 – Jul. 2014 *Women in Mathematics Society (Emmy Noether Society)*,
University of Cambridge