

Emanuel Malek

Date of Birth: 11th April 1989

Nationality: Germany

Humboldt-Universität zu Berlin,

Institut für Physik,

Zum Großen Windkanal 6,

12489 Berlin, Germany

POSITIONS

Jul. 2020 – ongoing	Emmy Noether Junior Research Group Leader , Humboldt-Universität zu Berlin, Germany
Sep. 2018 – Jul. 2020	Junior Scientist/Postdoc , Max-Planck-Institut für Gravitationsphysik, Postdam, Germany
Sep. 2015 – Sep. 2018	Research fellow , Ludwig-Maximilians-Universität München, Germany
Aug. 2014 – Aug. 2015	Postdoctoral fellow , University of Cape Town, South Africa

EDUCATION

Oct. 2010 – Jun. 2014	DAMTP, University of Cambridge , United Kingdom Ph.D. Theoretical Physics Thesis: <i>Duality Invariant Formulations of String and M-theory</i> , 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, 4th in year

AWARDS AND FELLOWSHIPS

2020	Emmy Noether Research Group (€1,230,000) by DFG (German Research Foundation)
2018	Seal of Excellence (proposal scoring 91.20%), Marie Curie Actions IF
2015 – 2017	CONICET (Argentinian Research Council) Fellowship, declined to accept position at LMU Munich
2010 – 2014	Peterhouse Research Studentship (for the most promising Peterhouse PhD candidates)
2010 – 2013	STFC PhD Studentship
2011	Smith-Knight and Rayleigh-Knight Essay Prize
2010	Hugo de Balsham Prize for Exceptional Academic Distinction (for academic performance throughout undergraduate and Master's)
2010	College Prize for Mathematics (for excellent exam performance)
2009, 2008	Sir James Dewar Scholarship in Natural Sciences (for ranking 4th out of 120 in final year, 8th out of 543 in second year)
2009	Tait Prize in Physics (for the best physics student of Peterhouse)
2008, 2007	College Prize for Natural Sciences (for excellent exam performance)
2007	College Scholarship (for excellent exam performance)

PUBLICATIONS

Peer-reviewed papers and preprints

E. Malek and H. Samtleben,

Kaluza-Klein Spectrometry from Exceptional Field Theory,
arXiv:2009.03347.

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

$E_{6(6)}$ *Exceptional Drinfel'd Algebras*,
arXiv:2007.08510.

E. Malek, H. Nicolai and H. Samtleben,

Tachyonic Kaluza-Klein modes and the AdS swampland conjecture,
arXiv:2005.07713, JHEP 08 (2020) 159.

E. Malek and H. Samtleben,

Kaluza-Klein Spectrometry for Supergravity,
arXiv:1911.12640, Phys. Rev. Lett. 124 (2020) no. 10, 101601.

E. Malek and D. C. Thompson,

Poisson-Lie U-duality in Exceptional Field Theory,
arXiv:1911.07833, JHEP 2004 (2020) 058.

D. Lüst, **E. Malek**, E. Plaushinn and M. Syväri,

Open-String Non-Associativity in an R-flux Background,
arXiv:1903.05581, JHEP 2005 (2020) 157.

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.

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.

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.

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.

D. Lüst, **E. Malek** and M. Syväri,

Locally non-geometric fluxes and missing momenta in M-theory,
arXiv:1710.05919, JHEP 1801 (2018) 050.

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.

E. Malek,

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

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.

E. Malek,

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

E. Malek,

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

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.

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

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

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.

E. Malek and H. Samtleben,

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

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.

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

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

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.

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.

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.

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

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

Conference proceedings

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

Sep. 2019	<i>Workshop on Recent Developments in Strings and Gravity,</i> Corfu, Greece
Jun. 2019	<i>Integrability, duality and beyond,</i> Santiago de Compostela, Spain
May 2019	<i>Holography, Generalized Geometry and Duality,</i> Mainz Institute for Theoretical Physics, Germany
Feb. 2019	<i>Double field theory: progress and applications,</i> University of Cape Town, South Africa
Sep. 2018	<i>String Theory, Geometry and String Model Building,</i> Mainz Institute for Theoretical Physics, Germany
Sep. 2018	<i>Dualities and Generalized Geometries,</i> Corfu, Greece
Jul. 2018	<i>Workshop on Geometry and Strings,</i> Ringberg Caste, Germany
May 2018	<i>Workshop on Strings and Black Holes,</i> Utah State University, USA
Apr. 2018	<i>Exceptional Quantum Gravity,</i> Mallorca, Spain
Jan. 2018	<i>String Dualities and Geometry,</i> Centro Atomico Bariloche, Argentina
Sep. 2017	<i>Multi Facets of Extended Duality,</i> Institute for Basic Sciences, Seoul, South Korea

Jun. 2017	<i>Recent Advances in T/U-dualities and Generalized Geometries,</i> Zagreb, Croatia
Apr. 2017	<i>Noncommutativity and Physics: Quantum Spacetime Structures,</i> Bayrischzell, Germany
Jan. 2017	<i>String and M-theory geometries: Double Field Theory, Exceptional Field Theory and their Applications,</i> Banff International Research Station, Canada
Nov. 2016	<i>Workshop on Geometry and Physics,</i> Schloss Ringberg, Germany
May 2016	<i>Generalized Geometry & T-duality,</i> Simons Center for Geometry and Physics, USA
Feb. 2016	<i>Duality and Novel Geometry in M-theory,</i> APCTP, Postech, South Korea
Aug. 2015	<i>Duality Symmetries in String and M-theories,</i> CERN, Switzerland

Invited seminars

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

CONFERENCES AND SEMINARS ORGANISED

Apr. 2020 – ongoing	<i>Exceptional Geometry Seminar Series,</i> Virtual Seminar Series
Dec. 2019	<i>Geometry and Duality,</i> Max-Planck-Institut für Gravitationsphysik, Germany
Dec. 2018 – Jul. 2020	<i>Quantum Gravity and Unified Theories Seminar Series,</i> Max-Planck-Institut für Gravitationsphysik, Germany
Dec. 2014	<i>Frontiers of the AdS/CMT correspondence,</i> University of Cape Town, South Africa

TEACHING AND SUPERVISING EXPERIENCE

Research students

- 2017 – ongoing Marc Syväri, PhD student
Thesis: Non-geometric backgrounds in exceptional field theory
Co-supervisor (with Dieter Lüst)
- 2016 – 2017 Marc Syväri, Master's student
Thesis: Non-geometric fluxes from exceptional field theory
Co-supervisor (with Dieter Lüst)

Lecturing experience

- Sep. 2017 **Topology and geometry for physicists,**
XIII Modave Summer School in Mathematical Physics
- 2014 – 2015 **Complex Geometry and Calabi-Yau Manifolds,**
University of Cape Town

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 – Jul. 2020 **International Teaching Professionals Programme,**
Potsdam University