

# CURRICULUM VITAE

Julia Gehrlein

## PERSONAL DATA

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## ACADEMIC POSITIONS

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Since Sep 2019	Research Associate at the High Energy Theory group at BNL
Sep 2016-Aug 2019	PhD student at the IFT, UAM-CSIC, Madrid, Spain Junior Early Stage Researcher at the ITN Marie Curie <i>Elusives</i>
Nov 2015-Aug 2016	Master Student in Physics at the Institute for Theoretical Particle Physics, KIT, Karlsruhe, Germany
Jun 2014-Jul 2015	Research student at the Institute for Theoretical Particle Physics, KIT, Karlsruhe, Germany
Apr 2014-Jun 2014	Bachelor student in Physics at the Institute for Theoretical Particle Physics, KIT, Karlsruhe, Germany

## EDUCATION

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June 2019	PhD in Physics
Aug 2016	Master of Science in Physics
Oct 2014-Aug 2016	Master Student in Physics at the KIT, Karlsruhe, Germany
Sept 2014	Bachelor of Science in Physics
Oct 2011-Sept 2014	Studies of Physics at the KIT, Karlsruhe, Germany
Mar 2011	High school degree (“Abitur”)

## DOCTORAL THESIS

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Institution	Física Teórica UAM-CSIC, Madrid, Spain
Title	Neutrino windows to new physics
Supervisor	Dr. Enrique Fernández-Martínez, Dr. Mattias Blennow
Date	May 2019

## MASTER THESIS

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Institution	Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany
Title	On the predictivity of leptonic sum rules
Supervisor	Dr. Martin Spinrath
Date	August 2016

## BACHELOR THESIS

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Institution	Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany
Title	An $SU(5) \times A_5$ Flavour Model – Phenomenology (in German)
Supervisors	Dr. Martin Spinrath
Date	June 2014

## SCHOLARSHIPS

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2016	Junior Early Stage Researcher fellowship with the Marie Curie ITN <i>Elusives</i> (100.000 € over 3 years)
2015	DESY Summer Student fellowship of 2100 €

## TRAVEL AWARDS

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2019	Travel award of 1100 \$ to spend three weeks at Fermilab, USA
2018	Travel award of 600 € to attend Moriond Electroweak, La Thuile, Italy
2017	Travel award of 2000 € to spend one week at KTH Stockholm, Sweden
2016	Travel award of 250 € to attend the DPG Spring Meeting, Hamburg, Germany
2015	Travel award of 250 € to attend the DPG Spring Meeting, Wuppertal, Germany

## RESEARCH STAYS

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Aug 2019	Research stay at Fermilab, USA Host: Stephen Parke
Feb 2019	Invited research stay at LPTHE Paris, France Host: Kalliopi Petraki
Feb-May 2018	Research stay at University Heidelberg, Germany Host: Jörg Jäckel
Jun-Sept 2017	Internship at GMV, Madrid, Spain Host: Ana Maria Curiel
Mar-May 2017	Research stay at Fermilab, USA Host: Stephen Parke
Jan 2017	Research stay at the KTH, Stockholm, Sweden Host: Mattias Blennow
Jul-Sep 2015	DESY Summer Student Programme, at DESY, Hamburg, Germany Supervisors: Georg Weiglein, Emanuele Bagnaschi

## COMPUTING SKILLS

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Mathematica, L<sup>A</sup>T<sub>E</sub>X, C/ C++, Python, Feynrules, Madgraph, Madanalysis, nuSQuIDS, MultiNest, Armadillo

## TEACHING EXPERIENCE AS TEACHING ASSISTANT

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Summer Term 2015	Theoretical Mechanics I
Winter Term 2015/2016	Theoretical Quantum Mechanics II

## ATTENDED WORKSHOPS AND SCHOOLS

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Nov 2019	Magnificent CE $\nu$ NS Workshop in Chapel Hill, USA
Sep 2019	BNL Forum at Brookhaven National Laboratory, USA
June 2019	Invisibles19 Workshop in Valencia, Spain
June 2019	Invisibles19 School in Canfranc, Spain
Nov 2018	Software Carpentry Workshop, IFT Madrid, Spain
Sep 2018	Invisibles18 Workshop in Karlsruhe, Germany
Aug 2018	Invisibles18 School in Burghausen, Germany
May 2018	Planck 2018 in Bonn, Germany
Mar 2018	Moriond 2018-Electroweak in La Thuile , Italy
June 2017	Invisibles17 Workshop in Zurich, Switzerland
June 2017	Invisibles17 School in Murten, Switzerland
Sep 2016	Invisibles16 Workshop in Padova, Italy
Sep 2016	Invisibles16 School in Trieste, Italy
Feb 2016	DPG Spring Meeting, Hamburg, Germany
Mar 2015	DPG Spring Meeting, Wuppertal, Germany

## FURTHER ACTIVITIES

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Since 2020	Organizer of the neutrino journal club at BNL
2018	Member of the Junior organisation committee for BLV 2019 in Madrid
Since 2018	Reviewer for EPJC, PRD
Sep 2017-Aug 2019	In charge of the <a href="#">Pheno-Coffee</a> (journal club) at the IFT
Sep 2017-Aug 2019	Filming of various videos for the outreach project <i>IFT responde</i> <a href="#">What is particle decay?</a> , <a href="#">Matter-Antimatter annihilation</a> , <a href="#">Why does light take so long to exit the Sun whereas neutrinos can escape easily?</a> , <a href="#">Why is the weak force weak?</a>
Sep 2016-Aug 2019	Author of various articles for the outreach section of the <i>Elusives</i> homepage <a href="#">Baryogenesis and Dark Matter from B-mesons</a> , <a href="#">DAMPE: a spectral break and a new excess in the TeV spectrum of cosmic-ray electrons and positrons</a> , <a href="#">The Radial Acceleration Relation in Rotationally Supported Galaxies</a>
Sep 2016-Aug 2019	In charge of the <a href="#">Invisibles+</a> and <i>Elusives</i> Webinar at the IFT

## MEMBERSHIPS

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Member	German Physical Society, Brookhaven Women in Science, Graduate Women in Science
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# LIST OF PUBLICATIONS

Julia Gehrlein

## PEER-REVIEWED ARTICLES

CITATIONS ON INSPIRE (FEB 2020): 342

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- [A13] *A testable hidden-sector model for Dark Matter and neutrino masses*  
Julia Gehrlein and Mathias Pierre,  
40 pp. JHEP02 (2020) 068. Preprint: arXiv:1912.06661 [hep-ph].
- [A12] *Very Light Asymmetric Dark Matter*  
Gonzalo Alonso-Álvarez, Julia Gehrlein, Joerg Jaeckel and Sebastian Schenk,  
32 pp. JCAP **1909**, 003 (2019). Preprint: arXiv:1906.00969 [hep-ph].
- [A11] *Bivo phenomenology at the LHC*  
Julia Gehrlein, Seyda Ipek and Patrick J. Fox,  
18 pp. JHEP **1903**, 073 (2019). Preprint: arXiv:1901.09284 [hep-ph].
- [A10] *Natural and Dynamical Neutrino Mass Mechanism at the LHC*  
Julia Gehrlein, Dorival Gonçalves, Pedro A. N. Machado and Yuber F. Perez-Gonzalez,  
9 pp. Phys. Rev. D **98**, no. 3, 035045 (2018). Preprint: arXiv:1804.09184 [hep-ph].
- [A9] *IceCube bounds on sterile neutrinos above 10 eV*  
Mattias Blennow, Enrique Fernandez-Martinez, Julia Gehrlein, Josu Hernandez-Garcia and Jordi Salvado,  
20 pp. Eur. Phys. J. C **78**, no. 10, 807 (2018). Preprint: arXiv:1803.02362 [hep-ph].
- [A8] *Dark Matter and the elusive  $Z'$  in a dynamical Inverse Seesaw scenario*  
Valentina De Romeri, Enrique Fernandez-Martinez, Julia Gehrlein, Pedro A. N. Machado and Viviana Niro,  
21 pp. JHEP **1710**, 169 (2017). Preprint: arXiv:1707.08606 [hep-ph].
- [A7] *Neutrino Mass Sum Rules and Symmetries of the Mass Matrix*  
Julia Gehrlein and Martin Spinrath,  
10 pp. Eur. Phys. J. C **77**, no. 5, 281 (2017). Preprint: arXiv:1704.02371 [hep-ph].
- [A6] *Renormalisation Group Corrections to Neutrino Mixing Sum Rules*  
Julia Gehrlein, Serguey T. Petcov, Martin Spinrath and Arsenii V. Titov,  
42 pp. Published in JHEP **1611** (2016) 146. Preprint: arXiv:1608.08409 [hep-ph].
- [A5] *On the Predictivity of Neutrino Mass Sum Rules*  
Julia Gehrlein, Alexander Merle and Martin Spinrath,  
30 pp. Published in Phys. Rev. D **94** (2016) no.9, 093003.  
Preprint: arXiv:1606.04965 [hep-ph].
- [A4] *Leptogenesis in an  $SU(5) \times A_5$  Golden Ratio Flavour Model: Addendum.*  
Julia Gehrlein, Serguey T. Petcov, Martin Spinrath and Xinyi Zhang,  
15 pp. Published in Nucl. Phys. B **899** (2015) 617. Preprint: arXiv:1508.07930 [hep-ph].
- [A3] *Renormalisation Group Corrections to Neutrino Mass Sum Rules.*  
Julia Gehrlein, Alexander Merle and Martin Spinrath,  
25 pp. Published in JHEP **1509** (2015) 066. Preprint: arXiv:1506.06139 [hep-ph].
- [A2] *Leptogenesis in an  $SU(5) \times A_5$  Golden Ratio Flavour Model.*  
Julia Gehrlein, Serguey T. Petcov, Martin Spinrath and Xinyi Zhang,  
22 pp. Published in Nucl. Phys. B **896** (2015) 311. Preprint: arXiv:1502.00110 [hep-ph].

- [A1] *An  $SU(5) \times A_5$  Golden Ratio Flavour Model.*  
Julia Gehrlein, Jens P. Oppermann, Daniela Schäfer and Martin Spinrath,  
34 pp. Published in Nucl. Phys. B **890** (2015) 539. Preprint: arXiv:1410.2057 [hep-ph]

## CONFERENCE PROCEEDINGS

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- [P2] *Sterile neutrinos searches at IceCube*  
Mattias Blennow, Enrique Fernandez-Martinez, Julia Gehrlein, Josu Herdandez-Garcia  
and Jordi Salvado,  
4 pp. Published in Proceedings 20th International Workshop on Neutrinos from  
Accelerators (NuFact18): Blacksburg, VA, USA, August 13-18, 2018.
- [P1] *Inverse Seesaw from dynamical  $B - L$  breaking*  
Julia Gehrlein,  
4 pp. Published in Proceedings Moriond 2018-Electroweak session.  
Preprint: arXiv:1805.04730 [hep-ph].

# LIST OF PRESENTATIONS

Julia Gehrlein

## SEMINAR TALKS

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<i>upcoming:</i> Jun 2020	<b>Invited</b> seminar at Fermilab
Nov 2019	<i>Neutrino Windows to new physics</i> , HET lunch seminar at BNL
Feb 2019	<i>Natural and dynamical neutrino mass model at the LHC</i> , <b>Invited</b> seminar at LPTHE Paris
Dec 2018	<i>IceCube bounds on sterile neutrinos above 10 eV</i> , <b>Invited</b> Webinar for N3AS network
Nov 2018	<i>Natural and dynamical neutrino mass model at the LHC</i> , <b>Invited</b> <i>Elusives</i> Student Webinar
May 2018	<i>Cosmic neutrino background</i> , PhD seminar at University of Heidelberg
Feb 2017	<i>Corrections to Leptonic sum rules</i> , PhD seminar at the IFT, Madrid
Jan 2017	<i>Corrections to Leptonic sum rules</i> , <b>Invited</b> <i>Elusives</i> Student Webinar
May 2016	<i>Leptonic sum rules</i> , Institute Seminar, KIT
Dec 2015	<i>Sum rules for lepton flavor observables</i> , <b>Invited</b> Seminar: B-Lunch (joint theorists and experimentalists seminar), KIT
Oct 2015	<i>Neutrino mass and angle sum rules</i> , Seminar: Flavour and Supersymmetry (Group Seminar), KIT
May 2015	<i>Leptogenesis</i> , Institute Seminar, KIT
Apr 2015	<i>The <math>8\times 8</math>-fold way</i> , Seminar: Flavour and Supersymmetry (Group Seminar), KIT
Nov 2014	<i><math>SU(5)</math> as a GUT</i> , Seminar: Flavour and Supersymmetry (Group Seminar), KIT
Jul 2014	<i>An <math>SU(5)\times A_5</math> Flavour Model – Phenomenology</i> , <b>Invited</b> Bachelor-Workshop at the Institute for Theoretical Particle Physics, KIT
Jun 2014	<i>Spontaneous Symmetry breaking</i> , Advanced students seminar: Theoretical and experimental methods in particle physics, KIT

## CONFERENCE TALKS

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Sep 2019	<i>IceCube bounds on sterile neutrinos above 10 eV,</i> BNL Forum 2019, Brookhaven National Laboratory
Sep 2018	<i>IceCube bounds on sterile neutrinos above 10 eV,</i> Invisibles18 Workshop, Karlsruhe
May 2018	<i>IceCube bounds on sterile neutrinos above 10 eV,</i> Planck 2018, Bonn
Mar 2018	<i>Dynamical Inverse Seesaw,</i> Moriond-Electroweak 2018, La Thuile
Jun 2017	<i>Dynamical Inverse Seesaw,</i> Invisibles17 Workshop, Zurich
Feb 2016	<i>Corrections to Neutrino Mass Sum Rules,</i> DPG Spring Meeting, Hamburg
Mar 2015	<i>Sum Rules in Flavour Models,</i> DPG Spring Meeting, Wuppertal

## POSTER PRESENTATIONS

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Jun 2019	<i>Natural and dynamical neutrino mass model at the LHC,</i> Invisibles19 Workshop, Valencia
Sep 2018	<i>IceCube bounds on sterile neutrinos above 10 eV,</i> Invisibles18 Workshop, Karlsruhe
Jun 2017	<i>Dynamical Inverse Seesaw,</i> Invisibles17 Workshop, Zurich