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## LIST OF PUBLICATIONS

### Publications in International Journals in the past five years

1. *Variational technique for gauge boson masses;*  
Benjamin Koch, Cristobal Laporte;  
**Phys.Rev.D.103, 4, 045011**, 2021;  
DOI: doi.org/10.1103/PhysRevD.103.045011;  
arXiv:2006.09508.
2. *X17: A new force, or evidence for a hard  $\gamma + \gamma?$  process?;*  
Benjamin Koch;  
**Nucl.Phys.A.1008, 122143**, 2021;  
DOI: 10.1016/j.nuclphysa.2021.122143;  
arXiv:2003.05722.
3. *Electromagnetic stress on nucleon structure;*  
Benjamin Koch;  
**Nucl.Phys.A.999, 121736**, 2020;  
DOI: 10.1016/j.nuclphysa.2020.121736;  
[arXiv:1906.08276].
4. *Cosmological constant problem: deflation during inflation;*  
Felipe Canales, Benjamin Koch, Cristobal Laporte, Ángel Rincón;  
**JCAP.no.01, 21**, 2020;  
DOI: 10.1088/1475-7516/2020/01/021;  
[arXiv:1812.10526].
5. *A hidden constraint on the Hamiltonian formulation of relativistic worldlines;*  
Benjamin Koch and Enrique Muñoz;  
**Eur.Phys.J.C**, 2019;  
DOI: 10.1140/epjc/s10052-019-7459-z;  
[arXiv:1901.08673].
6. *Scale-dependent planar anti-de Sitter black hole;*  
Ernesto Contreras, Ángel Rincón, Pedro Bargueño, Benjamin Koch;  
**Eur.Phys.J.Plus**, 2019;

DOI: 10.1140/epjp/i2019-13081-5;  
[arXiv:1901.03650 ].

7. *Scale-dependent ( 2+1 )-dimensional electrically charged black holes in Einstein-power-Maxwell theory;*  
Ángel Rincón, Ernesto Contreras, Pedro Bargeño, Benjamin Koch, Grigorios Panotopoulos;  
**Eur.Phys.J.C78.no.8, 641**, 2018;  
[arXiv:1807.08047].
8. *Scale-dependent BTZ black hole;*  
Ángel Rincón and Benjamin Koch;  
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[arXiv:1806.03024].
9. *The stepwise path integral of the relativistic point particle;*  
Benjamin Koch and Enrique Muñoz;  
**Eur.Phys.J.C78.no.4, 278**, 2018;  
[arXiv:1706.05388].

10. *Scale-dependent polytropic black hole;*  
Ernesto Contreras, Ángel Rincón, Benjamin Koch, Pedro Bargueño;  
**Eur.Phys.J.C78.no.3, 246**, 2018;  
[arXiv:1803.03255].
11. *A regular scale-dependent black hole solution;*  
Ernesto Contreras, Ángel Rincón, Benjamin Koch, Pedro Bargueño;  
**Int.J.Mod.Phys.D**, 2017;  
DOI: 10.1142/S0218271818500323;  
[arXiv:1711.08400].
12. *Symmetries of relativistic world-lines;*  
Benjamin Koch, Enrique Muñoz, and Ignacio Reyes;  
**Phys.Rev.D96.no.8:085011**, 2017  
[arXiv:1706.05386].
13. *Scale dependent three-dimensional charged black holes in linear and non-linear electrodynamics;*  
Ángel Rincón, Ernesto Contreras, Pedro Bargueño, Benjamin Koch, Grigorios Panotopoulos, Alejandro Hernández-Arboleda;  
**Eur.Phys.J.C77.no.7, 494**, 2017;  
[arXiv:1704.04845].
14. *Geometric description of the Schrödinger equation in  $3n+1$  dimensional configuration space ;*  
M. Abdul Wasay, Asma Bashir, Benjamin Koch, Abdul Ghaffar;  
Accepted in **Int.J.Geom.Meth.Mod.Phys.**, 2017;  
DOI: 10.1142/S0219887817501493;  
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15. *Prospects for CTA observations of the young SNR RX J1713.7-3946;*  
F. Acero, et al., CTA Collaboration;  
**Astrophys.J. 840 no.2, 74** 2017;  
[arXiv:1704.04136].
16. *Phenomenology of a Higgs triplet model at future  $e^+e^-$  colliders;*  
Sylvain Blunier, Giovanna Cottin, Marco Aurelio Díaz, and Benjamin Koch;  
**Phys.Rev.D95:075038**, 2017;  
[arXiv:1611.07896].
17. *Cosmic Censorship in Quantum Einstein Gravity;*  
Alfio Bonanno, Benjamin Koch, and Alessia Platania;  
**Class.Quant.Grav.34:095012.no.9**, 2017;  
[arXiv:1610.05299].
18. *Non-renormalizable Operators for Neutrino Solar Mass Difference Generation in Split SuSy with Bilinear R-parity Violation;*  
Marco Aurelio Diaz, Benjamin Koch, and Nicolas Rojas;  
**Nucl.Phys.B916:402-413**, 2017;  
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19. *A scale dependent black hole in three-dimensional space-time;*  
Benjamin Koch, Ignacio A. Reyes, and Ángel Rincón;  
**Class.Quant.Grav.****33:225010**, 2016;  
[arXiv:1606.04123].
20. *Improved Reissner-Nordström-(A)dS Black Hole in Asymptotic Safety;*  
Cristopher González and Benjamin Koch;  
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21. *Hidden Photons in Aharonov-Bohm-Type Experiments*  
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22. *On the Possibility of Non-Geodesic Motion of the Massless Spinning Top*  
Cristobal Armaza, Sergio A. Hojman, Benjamin Koch, and Nicolas Zalaquett;  
**Class.Quant.Grav.****33:145011**, 2016;  
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23. *Collisions of spinning massive particles in a Schwarzschild background;*  
Cristobal Armaza, Maximo Bañados, and Benjamin Koch;  
**Class.Quant.Grav.****33:105014**, 2016;  
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24. *Constraints to Dark Matter from Inert Higgs Doublet Model;*  
Marco Aurelio Díaz, Benjamin Koch, and Sebastian Urrutia-Quiroga;  
**AHEP.vol.2016 Article.ID.8278375**, 2016;  
[arXiv:1511.04429].
25. *Black hole solutions for scale dependent couplings:  
The de Sitter and the Reissner-Nordström case;*  
Benjamin Koch and Paola Rioseco;  
**Class.Quant.Grav.****33:035002**, 2016;  
[arXiv:1501.00904].
26. *Differentiable Path Integrals in Quantum Mechanics;*  
Benjamin Koch and Ignacio Reyes;  
**Int.J.Geom.Meth.Mod.Phys.vol.12.issue.09;**  
**DOI:10.1142/S0219887815501005**, 2015;  
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27. *Scale setting for self-consistent backgrounds;*  
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28. *On the integration of fields and quanta in time dependent backgrounds;*  
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29. *Black holes within asymptotic safety;*  
Benjamin Koch and Frank Saueressig;  
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30. *An angular formalism for spin one half;*  
Benjamin Koch and Nicolás Rojas;  
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31. *Closing a window for massive photons;*  
Sergio A. Hojman and Benjamin Koch;  
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32. *Structural aspects of asymptotically safe black holes;*  
Benjamin Koch and Frank Saueressig;  
**Class.Quant.Grav.31:015006**,2013;  
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33. *Exact black hole solution for scale dependent gravitational couplings and the corresponding coupling flow;*  
Carlos Contreras, Benjamin Koch, Paola Rioseco;  
**Class.Quantum Grav.30:175009**,2013;  
[arXiv:1303.3892].
34. *Higher dimensional geometric description of the Quantum Klein Gordon Equation;*  
Benjamin Koch;  
**Int.J.Geom.Meth.Mod.Phys.10:1320014**, 2013;  
DOI: 10.1142/S0219887813200144
35. *Nondiagonal charged lepton Yukawa matrix: Effects on neutrino mixing in supersymmetry*  
Giovanna Cottin, Marco Aurelio Díaz, and Benjamin Koch;  
**Phys.Rev.D85:095019**, 2012;  
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36. *Gravitino dark matter and neutrino masses in partial split supersymmetry;*  
Marco Aurelio Díaz, Sebastián García Sáenz, and Benjamin Koch;  
**Phys.Rev.D84:055007**, 2011;  
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37. *Exact renormalization group with optimal scale and its application to cosmology;*  
Benjamin Koch, Israel Ramirez;  
**Class.Quant.Grav.****28:055008**, 2011;  
[arXiv:1010.2799].
38. *Renormalization group improved black hole space-time in large extra dimensions;*  
Thomas Burschil, Benjamin Koch;  
**JETP Lett.****92:4**, 2010;  
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39. *Explaining Solar Neutrinos  
with Heavy Higgs Masses in Partial Split Supersymmetry;*  
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**Phys.Rev.D****80:113005**, 2009;  
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40. *Gravity Effects on Neutrino Masses in Split Supersymmetry;*  
Marco Aurelio Díaz, Benjamin Koch, Boris Panes;  
**Phys.Rev.D****79:113009**, 2009;  
[arXiv:0902.1720].
41. *Exclusion of black hole disaster scenarios at the LHC;*  
Benjamin Koch, Marcus Bleicher, Horst Stöcker;  
**Phys.Lett.B****672:71**, 2009;  
[arXiv:0807.3349].
42. *Renormalization group and black hole production in large extra dimensions;*  
Benjamin Koch;  
**Phys.Lett.B****663:334**, 2008;  
[arXiv:0707.4644].
43. *Gravitational radiation from elastic particle scattering  
in models with extra dimensions;*  
Benjamin Koch, Marcus Bleicher;  
**JETP Lett.****87:75**, 2008;  
[hep-th/0512353].
44. *First Order Calculation of the Inclusive Cross Section  $pp$  to  $ZZ$   
by Graviton Exchange in Large Extra Dimensions;*  
Martin Kober, Benjamin Koch, Marcus Bleicher;  
**Phys.Rev.D****76:125001,2007**, 2007;  
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45. *The Gravitational analogue to the hydrogen atom. A summer study at the bor-  
ders of quantum mechanics and general relativity;*  
Martin Kober, Benjamin Koch, Marcus Bleicher;  
**J-Phys.E.****28:465**, 2007;  
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46. *Gravitational Radiation from Ultrahigh Energy Cosmic Rays in Models with Large Extra Dimensions*;  
Benjamin Koch, Hans Joachim Drescher, Marcus Bleicher;  
**Astropart.Phys.****25:291**, 2006;  
[arXiv:astro-ph/0602164].
47. *Black Hole Remnants at the LHC*;  
Benjamin Koch, Marcus Bleicher, Sabine Hossenfelder;  
**JHEP** **0510:053**, 2005;  
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48. *On the null energy condition in scale dependent frameworks with spherical symmetry*;  
Angel Rincon and Benjamin Koch;  
**J.Phys.Conf.Ser.1043.no1.012015**, 2018;  
[arXiv:1705.02729].
49. *Asymptotically Safe gravitational collapse: Kuroda-Papapetrou RG-improved model*;  
Alfio Bonanno, Benjamin Koch, and Alessia Platania;  
**PoS CORFU2016 058** , 2017;  
[inspire].
50. *BTZ black hole assuming running couplings*  
Ángel Rincón, Benjamin Koch, and Ignacio A. Reyes;  
70 / 70 Gravitation fest, Cartagena, Colombia;  
**J.Phys.Conf.Ser. 831, no.1, 012007**, 2017.
51. *Cherenkov Telescope Array Contributions to the 35th International Cosmic Ray Conference (ICRC2017)*  
F. Acero, et al., CTA Collaboration;  
**C17-07-12**, 2017.
52. *Contributions of the Cherenkov Telescope Array (CTA) to the 6th International Symposium on High-Energy Gamma-Ray Astronomy (Gamma 2016)*  
F. Acero, et al., CTA Collaboration;  
6th International Symposium on High-Energy Gamma-Ray Astronomy, Heidelberg, Germany;  
**C16-07-11.5**, 2016.
53. *Setting the Renormalization Scale in QFT*  
Carlos Contreras, Benjamin Koch, and Paola Rioseco;  
Proceedings del XIII Simposio Chileno de Física; Concepcion, Chile;  
**J.Phys.Conf.Ser. 720, no.1, 012020**, 2016.
54. *The bending of light within gravity with large scale renormalization group effects*  
Davi Rodrigues, Benjamin Koch, Oliver Piattella, and Ilya Shapiro;  
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55. *Black holes and running couplings: A comparison of two complementary approaches*  
 Benjamin Koch, Carlos Contreras, Paola Rioseco, and Frank Saueressig;  
 Karl Schwarzschild Meeting;  
 Frankfurt, Germany;  
**C13-07-22.2**, 2013.
56. *Non-diagonal Charged Lepton Yukawa Matrix: Effects on Neutrino Mixing in Supersymmetry*  
 Giovanna Cottin, Marco Aurelio Díaz, and Benjamin Koch;  
 FLASY 2011;  
 Valencia, Spain;  
**C11-07-11.1**, 2012.
57. *Quantizing Geometry or Geometrizing the Quantum?*  
 Benjamin Koch;  
 Quantum Theory Reconsideration of Foundations 5;  
 Vaxjo, Sweden;  
**AIP Conf.Proc.1232:313**, 2010.
58. *Geometrizing the Quantum - a toy model*  
 Benjamin Koch;  
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 Wroclaw, Poland;  
**AIP Conf.Proc.1196:161**, 2009.
59. *Heavy Ion Collisions at the LHC - Last Call for Predictions;*  
 N. Armesto, (ed.) et al.;  
 Workshop on Heavy Ion Collisions at the LHC: Last Call for Predictions;  
 Geneva, Switzerland;  
**J.Phys.G35:054001**, 2008;  
 [arXiv:0711.0974].
60. *Early black hole signals at the LHC;*  
 Benjamin Koch, Marcus Bleicher, Horst Stöcker;  
 7th Latin American Symposium on Nuclear Physics and Applications;  
 Cusco, Peru;  
**AIP Conf.Proc.947:376**, 2007.
61. *An introduction to mini black holes at LHC;*  
 Horst Stöcker, Benjamin Koch, Marcus Bleicher;  
 36th International Symposium on Multiparticle Dynamics,  
 Rio de Janeiro, Brazil;  
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62. *Black Holes at LHC?*  
 Benjamin Koch, Marcus Bleicher, Horst Stöcker;  
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63. *Black Holes and Qasistable Remnants at the LHC;*  
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64. *Towards a Realistic MSSM Prediction for Neutrino-nucleon Deep-inelastic Scattering;*  
 Oliver Brein, Wolfgang Hollik, Benjamin Koch;  
 14th International Conference on Supersymmetry and the Unification of Fundamental Interactions; Irvine, USA;  
**IPPP-06-74**, 2006;  
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65. *Signatures for Black Hole Production from Hadronic Observables at the Large Hadron Collider;*  
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 Frankfurt, Germany;  
**Int.J.Mod.Phys.E16:841**, 2006  
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66. *Mini Black Holes at the LHC: Discovery through Di-jet Suppression, Mono-jet Emission and a Supersonic boom in the Quark-gluon Plasma in ALICE, ATLAS and CMS;*  
 B. Betz, Marcus Bleicher, U. Harbach, T. Humanic, B. Koch , H. Stöcker;  
 22nd Winter Workshop on Nuclear Dynamic;  
 La Jolla, USA, 2006;  
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67. *Large Extra Dimensions and the Minimal Scale Constraints through High Precision Experiments;*  
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 Annual Meeting of the Division of Particles and Fields;  
 Riverside, California, USA;  
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68. *Radiative Corrections to Deep-inelastic Neutrino-nucleon Scattering in the MSSM;*  
 Oliver Brein, Wolfgang Hollik, Benjamin Koch;  
 International Conference on Linear Colliders (LCWS 2004);  
 Paris, France;  
 [arXiv:hep-ph/0408331].

## Submitted Publications

69. *A technique for natural gauge boson masses;*  
Benjamin Koch and Cristobal Laporte;  
[arXiv:2006.09508].
70. *X17: A new force, or evidence for a hard  $\gamma + \gamma$  process?;*  
Benjamin Koch;  
[arXiv:2003.05722].

## Preprint only

71. *Science with the Cherenkov Telescope Array;*  
Cherenkov Telescope Array Consortium;  
[arXiv:1709.07997].
72. *On the dynamics of fluctuations in time crystals;*  
Esteban Castillo, Benjamin Koch, and Gonzalo Palma;  
[arXiv:1410.2261].
73. *Exploring a Tractable Lagrangian for Arbitrary Spin;*  
Benjamin Koch and Nicolas Rojas;  
[arXiv:1107.3144].
74. *A Geometrical dual to relativistic Bohmian mechanics: The Multi particle case;*  
Benjamin Koch;  
[arXiv:0901.4106].
75. *Relativistic Bohmian mechanics from scalar gravity;*  
Benjamin Koch;  
[arXiv:0810.2786].
76. *(2+3) dimensional geometrical dual of the complex Klein-Gordon equation;*  
Benjamin Koch;  
[arXiv:0801.4635].
77. *Trapping black hole remnants;*  
Sabine Hossenfelder, Benjamin Koch, and Marcus Bleicher;  
[hep-ph/0507140].