

# Philipp Mertsch

## Curriculum Vitæ

Institute for Theoretical Physics and Cosmology (TTK)  
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April 2024

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## Employment

- since Apr. 2024 **Professor**, *Institute for Theoretical Physics and Cosmology (TTK)*, RWTH Aachen University.
- May 2017 - Apr. 2024 **Juniorprofessor**, *Institute for Theoretical Physics and Cosmology (TTK)*, RWTH Aachen University.
- Apr. 2016 - Apr. 2017 **Assistant Professor**, *Niels Bohr International Academy, The Niels Bohr Institute*, University of Copenhagen.
- Oct. 2012 - Mar. 2016 **Kavli Fellow**, *Kavli Institute for Particle Astrophysics and Cosmology, SLAC National Accelerator Laboratory*, Stanford University.
- Oct. 2010 - Oct. 2012 **Post-doctoral research assistant**, *Rudolf Peierls Centre for Theoretical Physics*, University of Oxford.

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## Education and Qualifications

- Oct. 2007 - Oct. 2010 **DPhil in Theoretical Physics**, *University of Oxford*.  
Thesis: "Cosmic ray backgrounds for dark matter indirect detection"
- Oct. 2000 - Feb. 2007 **Diploma in physics**, *Bayerische Julius-Maximilians Universität Würzburg*, grade: very good 1.0 (with distinction).  
Thesis: "Gluon-Induced Off-Shell Z-Boson Pair Production at the LHC"
- Aug. 2003 - June 2004 **Maîtrise in physics**, *Université Joseph Fourier, Grenoble*, grade: good.

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## Awards and fellowships

- Oct. 2012 - Mar. 2016 Kavli Fellow, *Kavli Institute for Particle Astrophysics and Cosmology, SLAC National Accelerator Laboratory, Stanford University*
- Oct. 2010 - Oct. 2012 Junior Research Fellow, *Linacre College, University of Oxford*
- Oct. 2007 - Oct. 2010 Early Stage Researcher, *Marie Curie Research and Training Network "UniverseNet"*
- Apr. 2002 - Oct. 2006 Grant from the Cusanuswerk (one of the 11 national student elite programs of Germany, selecting less than 1% of students each year for outstanding academic achievement)

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## Teaching

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### Teaching at RWTH Aachen University

- winter term 2023/24 Theory of Relativity and Cosmology
- summer term 2023 Neutron Stars, Black Holes and Ultra High-Energy Cosmic Rays

winter term 2022/23	The Non-Thermal Universe
summer term 2022	Theoretical Physics I (Classical mechanics)
summer term 2021	Neutron Stars, Black Holes and Ultra High-Energy Cosmic Rays
winter term 2020/21	Theory of Relativity and Cosmology
winter term 2019/20	The Non-Thermal Universe
summer term 2019	Neutron Stars, Black Holes and Ultra High-Energy Cosmic Rays
winter term 2018/19	The Non-Thermal Universe
summer term 2018	Current Themes in High-Energy Astrophysics
winter term 2017/18	Introduction to High-Energy Astrophysics

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### Teaching at summer and winter schools

Feb. 2024	Lecturing at the <a href="#">Karlsruhe Institute of Technology</a> , Karlsruhe “Acceleration and Transport of Galactic Cosmic Rays”
Oct. 2023	Lecturing in the <a href="#">Erlangen Centre for Astroparticle Physics school</a> , Obertrubach “Galactic Cosmic Rays”
Sep. 2022	Lecturing at the <a href="#">Research Training Group 2149 Annual Retreat 2022</a> “Acceleration and Transport of Galactic Cosmic Rays”
Sep. 2021	Nobel Prize lecture at the <a href="#">Research Training Group 2497 Annual Meeting 2021</a> “Black holes, trapped surfaces and the 2020 Nobel Prize in physics”
Jan. 2017	Lecturing in the <a href="#">Nordic Winter School on Cosmology and Particle Physics 2017</a> “Multimessenger astrophysics and dark matter searches”
Aug. 2016	Lecture in the <a href="#">NBIA PhD School: Neutrinos Underground &amp; in the Heavens II</a> : “Neutrino interactions at high energies”

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### Supervision

#### PhD theses

since Oct. 2022	Anton Stall
since Oct. 2022	Laurin Söding
since Feb. 2020	Hanno Jacobs
Oct. 2018 - Apr. 2022	Marco Kuhlen

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#### Master's theses

since March 2024	Matthias Hübl
since Oct. 2023	Chun Khai Loo
since Oct. 2023	Erik de la Haye (jointly with Prof. J. Lesgourgues)
since Apr. 2023	Lasse Ausborm (jointly with Prof. C. Wiebusch)
Oct. 2022 - Oct. 2023	Leonard Kaiser
Oct. 2022 - Oct. 2023	Nikolas Frediani (jointly with Prof. M. Krämer)
Oct. 2022 - Oct. 2023	Felicitas Keil (jointly with Prof. J. Lesgourgues)
Oct. 2021 - Oct. 2022	Lena Saurenhaus
Oct. 2021 - Oct. 2022	Patrick Schillings
Apr. 2021 - Apr. 2022	Georg Schwefer (jointly with Prof. C. Wiebusch)
Oct. 2020 - Oct. 2021	Felix Bertz

Oct. 2019 - Oct. 2020 Michel Simon (jointly with Prof. M. Krämer)  
 Oct. 2019 - Oct. 2020 Hanno Jacobs  
 Oct. 2018 - Oct. 2019 Markus Schmidt  
 Oct. 2018 - Oct. 2019 Marc Klinger (jointly with Prof. T. Bretz)  
 Oct. 2017 - Oct. 2018 Benedikt Schroer  
 Oct. 2017 - Oct. 2018 Marco Kuhlen  
 Sep. 2011 - Sep. 2012 Niels Martens (jointly with Prof. S. Sarkar)

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### Bachelor's theses/summer projects

Apr. - Jun. 2023 Sebastian baltschun  
 Apr. - Jun. 2023 Jasper Schwan  
 Apr. - Jun. 2023 Alexander Tipp  
 Apr. - Jun. 2022 Matthias Hübl  
 Apr. - Jun. 2022 Moritz Gessner  
 Apr. - Jun. 2021 Sven Kroppenber  
 Apr. - Jun. 2020 Patrick Schillings  
 Apr. - Jun. 2020 Florian Schulze  
 Apr. - Jun. 2019 Georg Schwefer  
 Apr. - Jun. 2019 Lena Saurenhau  
 Apr. - Jun. 2018 Maria Tsedrik  
 Apr. - Jun. 2018 Tim Hebermann  
 June 2015 - Aug. 2015 Megan Splettstoesser

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### Organisation of scientific meetings

July 2024 22nd International Symposium on Very High Energy Cosmic Ray Interactions (ISVHECRI 2024), Puerto Vallarta, Mexico  
 May 2023 Cosmic Ray Anisotropy Workshop 2023, Chicago  
 Sep. 2022 RICAP-22, Roma International Astroparticle Physics conference, Rome  
 Convenor of parallel session "Cosmic rays"  
 Sep. 2019 Cosmo19 conference, Aachen. Member of the local organising committee  
 Oct. 2017 "Three elephants in the gamma-ray sky" workshop, Garmisch-Partenkirchen  
 Co-organiser  
 Sep. 2016 TeV Particle Astrophysics 2016, CERN, Geneva  
 Convenor of parallel session "Cosmic rays"  
 Dec. 2012 TeV Particle Astrophysics 2012, Mumbai  
 Convenor of parallel session "Galactic cosmic ray sources and propagation"

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### Professional Service

Referee for *The Astrophysical Journal*; *The Astrophysical Journal Letters*; *Astroparticle Physics*; *Astronomy & Astrophysics*; *Journal of Cosmology and Astroparticle Physics*; *Monthly Notices of the Royal Astronomical Society*; *Physical Review Letters*; *Physical Review D*; *Physics of Plasmas*; *European Physical Journal C*; *Astrophysics and Space Science*; *Physica A*

Grant reviews for *Agence Nationale de la Recherche*, Icelandic Research Fund, Swiss National Supercomputing Centre/ETH Zürich, *Université Paris Science et Lettres*

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## Collaborations

since Sep. 2022 Member of the *Particle Data Group (PDG)* collaboration. (PDG annually publishes the authoritative reference for the properties of elementary particles as well as reviews on particle physics and related fields.)

Coauthor and coordinator for a complete re-write of the review article “Cosmic Rays”, to be published in Oct. 2023

Oct. 2010 - Oct. 2012 Member of the *Pierre Auger Observatory* collaboration. Contribution to correlation analysis and high-energy neutrino cross-sections

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## Outreach

Oct. 2023 “*Schlag den Prof*”, professor participant in the game show at RWTH Aachen University

June 2023 Podcasts and presentation for *Wissenschaftsjahr 2023 “Unser Universum”* of the BMBF (Federal Ministry of Education and Research) on *imaging black holes* and on *the cosmic microwave background*

Sep. 2019 Q&A on the live video streaming app *Periscope*

Aug. 2018 Article in CERN courier: “*Elephants in the gamma-ray sky*”

since Feb. 2018 Individual consultation of interested non-specialists on astrophysics and cosmology

Apr. 2015 - Mar. 2017 Various events at Stanford University, e.g. *KIPAC open house*, *Astronomy Night* at Jordan Middle School, Palo Alto

Apr. & May 2014 Coverage of Loop I paper by *Physics World*, *New Scientist*, *Washington Post* and others

Jan. 2014 Participation in workshop by *Alan Alda Center for Communicating Science*

Jan. 2010 “Dark matter or standard astrophysics? On recent cosmic ray anomalies”. Public science talk at Balliol College, Oxford

Aug. 2009 Participation in the exhibition “*From Earth to the Universe*”, Oxford University Parks

Since Aug. 2009 Several interviews for the *Oxford Science Blog*

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## List of Publications

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### Preprints

[P102] Marco Kuhlen, Vo Hong Minh Phan, and Philipp Mertsch. “Field line subdiffusion and cosmic ray perpendicular transport in isotropic turbulence” (Nov. 2022). arXiv: [2211.05882](https://arxiv.org/abs/2211.05882) [[astro-ph.HE](https://arxiv.org/archive/hep)].

[P101] Marco Kuhlen, Vo Hong Minh Phan, and Philipp Mertsch. “Diffusion of relativistic charged particles and field lines in isotropic turbulence” (Nov. 2022). arXiv: [2211.05881](https://arxiv.org/abs/2211.05881) [[astro-ph.HE](https://arxiv.org/archive/hep)].

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### Review Papers

[P100] Philipp Mertsch. “Test particle simulations of cosmic rays”. *Astrophys. Space Sci.*

365.8 (2020), p. 135. DOI: [10.1007/s10509-020-03832-3](https://doi.org/10.1007/s10509-020-03832-3). arXiv: [1910.01172](https://arxiv.org/abs/1910.01172) [[astro-ph.HE](#)].

[P99] Stefano Gabici, Carmelo Evoli, Daniele Gaggero, Paolo Lipari, Philipp Mertsch, Elena Orlando, Andrew Strong, and Andrea Vittino. “The origin of Galactic cosmic rays: challenges to the standard paradigm”. *Int. J. Mod. Phys. D* (2019). DOI: [10.1142/S0218271819300222](https://doi.org/10.1142/S0218271819300222). arXiv: [1903.11584](https://arxiv.org/abs/1903.11584) [[astro-ph.HE](#)].

[P98] Markus Ahlers and Philipp Mertsch. “Origin of Small-Scale Anisotropies in Galactic Cosmic Rays”. *Prog. Part. Nucl. Phys.* 94 (2017), pp. 184–216. DOI: [10.1016/j.pnpnp.2017.01.004](https://doi.org/10.1016/j.pnpnp.2017.01.004). arXiv: [1612.01873](https://arxiv.org/abs/1612.01873) [[astro-ph.HE](#)].

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#### Short author list papers

[P97] R. Giuffrida, M. Miceli, S. Ravikularaman, V. H. M. Phan, S. Gabici, P. Mertsch, S. Orlando, and F. Bocchino. “Indication of a fast ejecta fragment in the atomic cloud interacting with the southwestern limb of SN 1006”. *Astron. Astrophys.* (Jan. 2024). *Accepted for publication*. arXiv: [2401.05001](https://arxiv.org/abs/2401.05001) [[astro-ph.HE](#)].

[P96] Vo Hong Minh Phan, Enrico Peretti, Pierre Cristofari, Antoine Gusdorf, and Philipp Mertsch. “Cosmic-ray induced ionization rates and non-thermal emissions from nuclei of starburst galaxies”. *Mon. Not. Roy. Astron. Soc.* (2024). *Accepted for publication*. DOI: [10.22323/1.444.0449](https://doi.org/10.22323/1.444.0449). arXiv: [2402.05915](https://arxiv.org/abs/2402.05915) [[astro-ph.HE](#)].

[P95] David Maurin, Markus Ahlers, Hans Dembinski, Andreas Haungs, Pierre-Simon Mangear, Frédéric Melot, Philipp Mertsch, Doris Wochele, and Jürgen Wochele. “A cosmic-ray database update: CRDB v4.1”. *Eur. Phys. J. C* 83.10 (2023), p. 971. DOI: [10.1140/epjc/s10052-023-12092-8](https://doi.org/10.1140/epjc/s10052-023-12092-8). arXiv: [2306.08901](https://arxiv.org/abs/2306.08901) [[astro-ph.HE](#)].

[P94] Hanno Jacobs, Philipp Mertsch, and Vo Hong Minh Phan. “Unstable cosmic ray nuclei constrain low-diffusion zones in the Galactic disc”. *Mon. Not. Roy. Astron. Soc.* 526.1 (2023), pp. 160–174. DOI: [10.1093/mnras/stad2719](https://doi.org/10.1093/mnras/stad2719). arXiv: [2305.10337](https://arxiv.org/abs/2305.10337) [[astro-ph.HE](#)].

[P93] Georg Schwefer, Philipp Mertsch, and Christopher Wiebusch. “Diffuse Emission of Galactic High-energy Neutrinos from a Global Fit of Cosmic Rays”. *Astrophys. J.* 949.1 (2023), p. 16. DOI: [10.3847/1538-4357/acc1e2](https://doi.org/10.3847/1538-4357/acc1e2). arXiv: [2211.15607](https://arxiv.org/abs/2211.15607) [[astro-ph.HE](#)].

[P92] Vo Hong Minh Phan, Sarah Recchia, Philipp Mertsch, and Stefano Gabici. “Stochasticity of cosmic rays from supernova remnants and the ionization rates in molecular clouds”. *Phys. Rev. D* 107.12 (2023), p. 123006. DOI: [10.1103/PhysRevD.107.123006](https://doi.org/10.1103/PhysRevD.107.123006). arXiv: [2209.10581](https://arxiv.org/abs/2209.10581) [[astro-ph.HE](#)].

[P91] Philipp Mertsch and Vo Hong Minh Phan. “Bayesian inference of three-dimensional gas maps - II. Galactic HI”. *Astron. Astrophys.* 671 (2023), A54. DOI: [10.1051/0004-6361/202243326](https://doi.org/10.1051/0004-6361/202243326). arXiv: [2202.02341](https://arxiv.org/abs/2202.02341) [[astro-ph.GA](#)].

[P90] Hanno Jacobs, Philipp Mertsch, and Vo Hong Minh Phan. “Self-confinement of low-energy cosmic rays around supernova remnants”. *JCAP* 05.05 (2022), p. 024. DOI: [10.1088/1475-7516/2022/05/024](https://doi.org/10.1088/1475-7516/2022/05/024). arXiv: [2112.09708](https://arxiv.org/abs/2112.09708) [[astro-ph.HE](#)].

- [P89] Marco Kuhlen, Vo Hong Minh Phan, and Philipp Mertsch. “No Longer Ballistic, Not Yet Diffusive—the Formation of Cosmic-Ray Small-scale Anisotropies”. *Astrophys. J.* 927.1 (2022), p. 110. DOI: [10.3847/1538-4357/ac503b](https://doi.org/10.3847/1538-4357/ac503b). arXiv: [2111.06419](https://arxiv.org/abs/2111.06419) [astro-ph.HE].
- [P88] Vo Hong Minh Phan, Florian Schulze, Philipp Mertsch, Sarah Recchia, and Stefano Gabici. “Stochastic Fluctuations of Low-Energy Cosmic Rays and the Interpretation of Voyager Data”. *Phys. Rev. Lett.* 127.14 (2021), p. 141101. DOI: [10.1103/PhysRevLett.127.141101](https://doi.org/10.1103/PhysRevLett.127.141101). arXiv: [2105.00311](https://arxiv.org/abs/2105.00311) [astro-ph.HE].
- [P87] P. Mertsch and A. Vittino. “Bayesian inference of three-dimensional gas maps. I. Galactic CO”. *Astron. Astrophys.* 655, A64 (Nov. 2021), A64. DOI: [10.1051/0004-6361/202141000](https://doi.org/10.1051/0004-6361/202141000). arXiv: [2012.15770](https://arxiv.org/abs/2012.15770) [astro-ph.GA].
- [P86] Philipp Mertsch, Andrea Vittino, and Subir Sarkar. “Explaining cosmic ray antimatter with secondaries from old supernova remnants”. *Phys. Rev. D* 104.10 (2021), p. 103029. DOI: [10.1103/physrevd.104.103029](https://doi.org/10.1103/physrevd.104.103029). arXiv: [2012.12853](https://arxiv.org/abs/2012.12853) [astro-ph.HE].
- [P85] P. Mertsch, G. Paribelli, P. F. de Salas, S. Gariazzo, J. Lesgourgues, and S. Pastor. “Neutrino clustering in the Milky Way and beyond”. *JCAP* 01 (2020), p. 015. DOI: [10.1088/1475-7516/2020/01/015](https://doi.org/10.1088/1475-7516/2020/01/015). arXiv: [1910.13388](https://arxiv.org/abs/1910.13388) [astro-ph.CO].
- [P84] Marco Kuhlen and Philipp Mertsch. “Time-dependent AMS-02 electron-positron fluxes in an extended force-field model”. *Phys. Rev. Lett.* 123.25 (2019), p. 251104. DOI: [10.1103/PhysRevLett.123.251104](https://doi.org/10.1103/PhysRevLett.123.251104). arXiv: [1909.01154](https://arxiv.org/abs/1909.01154) [astro-ph.HE].
- [P83] P. Mertsch and Markus Ahlers. “Cosmic ray small-scale anisotropies in quasi-linear theory”. *JCAP* 11 (2019), p. 048. DOI: [10.1088/1475-7516/2019/11/048](https://doi.org/10.1088/1475-7516/2019/11/048). arXiv: [1909.09052](https://arxiv.org/abs/1909.09052) [astro-ph.HE].
- [P82] Andrea Vittino, Philipp Mertsch, Henning Gast, and Stefan Schael. “Breaks in interstellar spectra of positrons and electrons derived from time-dependent AMS data”. *Phys. Rev. D* 100.4 (2019), p. 043007. DOI: [10.1103/PhysRevD.100.043007](https://doi.org/10.1103/PhysRevD.100.043007). arXiv: [1904.05899](https://arxiv.org/abs/1904.05899) [astro-ph.HE].
- [P81] Philipp Mertsch. “Stochastic cosmic ray sources and the TeV break in the all-electron spectrum”. *JCAP* 1811.11 (2018), p. 045. DOI: [10.1088/1475-7516/2018/11/045](https://doi.org/10.1088/1475-7516/2018/11/045). arXiv: [1809.05104](https://arxiv.org/abs/1809.05104) [astro-ph.HE].
- [P80] Philipp Mertsch and Vahé Petrosian. “The Fermi bubbles from stochastic acceleration of electrons in a Galactic outflow”. *Astron. Astrophys.* 622 (2019), A203. DOI: [10.1051/0004-6361/201833999](https://doi.org/10.1051/0004-6361/201833999). arXiv: [1808.00330](https://arxiv.org/abs/1808.00330) [astro-ph.HE].
- [P79] Philipp Mertsch, Mohamed Rameez, and Irene Tamborra. “Detection prospects for high energy neutrino sources from the anisotropic matter distribution in the local universe”. *JCAP* 1703.03 (2017), p. 011. DOI: [10.1088/1475-7516/2017/03/011](https://doi.org/10.1088/1475-7516/2017/03/011). arXiv: [1612.07311](https://arxiv.org/abs/1612.07311) [astro-ph.HE].
- [P78] Sebastian von Hausegger, Hao Liu, Philipp Mertsch, and Subir Sarkar. “Footprints of Loop I on Cosmic Microwave Background Maps”. *JCAP* 1603.03 (2016), p. 023. DOI: [10.1088/1475-7516/2016/03/023](https://doi.org/10.1088/1475-7516/2016/03/023). arXiv: [1511.08207](https://arxiv.org/abs/1511.08207) [astro-ph.CO].

- [P77] Markus Ahlers and Philipp Mertsch. “Small-Scale Anisotropies of Cosmic Rays from Relative Diffusion”. *Astrophys. J.* 815.1 (2015), p. L2. DOI: [10.1088/2041-8205/815/1/L2](https://doi.org/10.1088/2041-8205/815/1/L2). arXiv: [1506.05488](https://arxiv.org/abs/1506.05488) [astro-ph.HE].
- [P76] Dan Hooper, Tim Linden, and Philipp Mertsch. “What Does The PAMELA Antiproton Spectrum Tell Us About Dark Matter?” *JCAP* 1503.03 (2015), p. 021. DOI: [10.1088/1475-7516/2015/03/021](https://doi.org/10.1088/1475-7516/2015/03/021). arXiv: [1410.1527](https://arxiv.org/abs/1410.1527) [astro-ph.HE].
- [P75] Philipp Mertsch and Stefan Funk. “Solution to the cosmic ray anisotropy problem”. *Phys. Rev. Lett.* 114.2 (2015), p. 021101. DOI: [10.1103/PhysRevLett.114.021101](https://doi.org/10.1103/PhysRevLett.114.021101). arXiv: [1408.3630](https://arxiv.org/abs/1408.3630) [astro-ph.HE].
- [P74] Hao Liu, Philipp Mertsch, and Subir Sarkar. “Fingerprints of Galactic Loop I on the Cosmic Microwave Background”. *Astrophys. J.* 789.2 (2014), p. L29. DOI: [10.1088/2041-8205/789/2/L29](https://doi.org/10.1088/2041-8205/789/2/L29). arXiv: [1404.1899](https://arxiv.org/abs/1404.1899) [astro-ph.CO].
- [P73] Philipp Mertsch and Subir Sarkar. “AMS-02 data confront acceleration of cosmic ray secondaries in nearby sources”. *Phys. Rev. D* 90 (2014), p. 061301. DOI: [10.1103/PhysRevD.90.061301](https://doi.org/10.1103/PhysRevD.90.061301). arXiv: [1402.0855](https://arxiv.org/abs/1402.0855) [astro-ph.HE].
- [P72] Philipp Mertsch and Subir Sarkar. “Loops and spurs: The angular power spectrum of the Galactic synchrotron background”. *JCAP* 1306 (2013), p. 041. DOI: [10.1088/1475-7516/2013/06/041](https://doi.org/10.1088/1475-7516/2013/06/041). arXiv: [1304.1078](https://arxiv.org/abs/1304.1078) [astro-ph.GA].
- [P71] Mads T. Frandsen, Ulrich Haisch, Felix Kahlhoefer, Philipp Mertsch, and Kai Schmidt-Hoberg. “Loop-induced dark matter direct detection signals from gamma-ray lines”. *JCAP* 1210 (2012), p. 033. DOI: [10.1088/1475-7516/2012/10/033](https://doi.org/10.1088/1475-7516/2012/10/033). arXiv: [1207.3971](https://arxiv.org/abs/1207.3971) [hep-ph].
- [P70] Philipp Mertsch. “A new analytic solution for 2nd-order Fermi acceleration”. *JCAP* 1112 (2011), p. 010. DOI: [10.1088/1475-7516/2011/12/010](https://doi.org/10.1088/1475-7516/2011/12/010). arXiv: [1110.6644](https://arxiv.org/abs/1110.6644) [astro-ph.HE].
- [P69] Amanda Cooper-Sarkar, Philipp Mertsch, and Subir Sarkar. “The high energy neutrino cross-section in the Standard Model and its uncertainty”. *JHEP* 08 (2011), p. 042. DOI: [10.1007/JHEP08\(2011\)042](https://doi.org/10.1007/JHEP08(2011)042). arXiv: [1106.3723](https://arxiv.org/abs/1106.3723) [hep-ph].
- [P68] Philipp Mertsch and Subir Sarkar. “Fermi gamma-ray ‘bubbles’ from stochastic acceleration of electrons”. *Phys. Rev. Lett.* 107 (2011), p. 091101. DOI: [10.1103/PhysRevLett.107.091101](https://doi.org/10.1103/PhysRevLett.107.091101). arXiv: [1104.3585](https://arxiv.org/abs/1104.3585) [astro-ph.HE].
- [P67] Philipp Mertsch. “Cosmic ray electrons and positrons from discrete stochastic sources”. *JCAP* 1102 (2011), p. 031. DOI: [10.1088/1475-7516/2011/02/031](https://doi.org/10.1088/1475-7516/2011/02/031). arXiv: [1012.0805](https://arxiv.org/abs/1012.0805) [astro-ph.HE].
- [P66] Philipp Mertsch and Subir Sarkar. “Systematic effects in the extraction of the ‘WMAP haze’”. *JCAP* 1010 (2010), p. 019. DOI: [10.1088/1475-7516/2010/10/019](https://doi.org/10.1088/1475-7516/2010/10/019). arXiv: [1004.3056](https://arxiv.org/abs/1004.3056) [astro-ph.HE].
- [P65] Markus Ahlers, Philipp Mertsch, and Subir Sarkar. “On cosmic ray acceleration in supernova remnants and the FERMI/PAMELA data”. *Phys. Rev. D* 80 (2009), p. 123017. DOI: [10.1103/PhysRevD.80.123017](https://doi.org/10.1103/PhysRevD.80.123017). arXiv: [0909.4060](https://arxiv.org/abs/0909.4060) [astro-ph.HE].

- [P64] Philipp Mertsch and Subir Sarkar. “Testing astrophysical models for the PAMELA positron excess with cosmic ray nuclei”. *Phys. Rev. Lett.* 103 (2009), p. 081104. DOI: [10.1103/PhysRevLett.103.081104](https://doi.org/10.1103/PhysRevLett.103.081104). arXiv: [0905.3152](https://arxiv.org/abs/0905.3152) [[astro-ph.HE](#)].

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### Collaboration papers

- [P63] S. Schael et al. “AMS-100: The Next Generation Magnetic Spectrometer in Space – An International Science Platform for Physics and Astrophysics at Lagrange Point 2”. *Nuclear Instruments and Methods in Physics Research A* 944, 162561 (Nov. 2019), p. 162561. DOI: [10.1016/j.nima.2019.162561](https://doi.org/10.1016/j.nima.2019.162561). arXiv: [1907.04168](https://arxiv.org/abs/1907.04168) [[astro-ph.IM](#)].
- [P62] Pedro Abreu et al. “Bounds on the density of sources of ultra-high energy cosmic rays from the Pierre Auger Observatory”. *JCAP* 1305.05 (2013), p. 009. DOI: [10.1088/1475-7516/2013/05/009](https://doi.org/10.1088/1475-7516/2013/05/009). arXiv: [1305.1576](https://arxiv.org/abs/1305.1576) [[astro-ph.HE](#)].
- [P61] Pedro Abreu et al. “Ultrahigh Energy Neutrinos at the Pierre Auger Observatory”. *Adv. High Energy Phys.* 2013 (2013), p. 708680. DOI: [10.1155/2013/708680](https://doi.org/10.1155/2013/708680). arXiv: [1304.1630](https://arxiv.org/abs/1304.1630) [[astro-ph.HE](#)].
- [P60] B. S. Acharya et al. “Introducing the CTA concept”. *Astropart. Phys.* 43 (2013), pp. 3–18. DOI: [10.1016/j.astropartphys.2013.01.007](https://doi.org/10.1016/j.astropartphys.2013.01.007).
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