

MICHAEL KORSMEIER

I am interested in astroparticle physics and the search for the nature dark matter. I have worked on cosmic-ray propagation with a special emphasis on antiprotons and antinucleons and the interpretation of the gamma-ray observation, in particular, focussing on the unresolved gamma-ray background. A related interests is the interpretation of signatures and constraints from astroparticle physics in theories beyond the standard model of particle physics.

PERSONAL INFORMATION

Born in Germany, 26 November 1990

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11733 Stockholm
Sweden

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EMPLOYMENT

Postdoc 2020–present The Oskar Klein Centre, Stockholm University
Focus: Theoretical astroparticle physics and the search for dark matter
Reference: Tim LINDEN · linden@fysik.su.se

EDUCATION

Ph.D. position 2016–2020 University of Turin and RWTH Aachen University
Focus: Theoretical astroparticle physics of cosmic radiation and the search for dark matter signatures
The Ph.D. position is joint between the University of Turin and the RWTH Aachen University under a *Cotutelle agreement* which allows a joint degree between the two universities.
Reference: Fiorenza DONATO · donato@to.infn.it
 Michael KRÄMER · mkraemer@physik.rwth-aachen.de

Masters of Science 2014–2016 RWTH Aachen University
1.0 – excellent · *Physics*
Focus of study: Quantum field theories and gauge theories
Thesis: *Global analysis of cosmic-ray propagation in the light of AMS-02 and the impact on indirect detection of dark matter*
Reference: Michael KRÄMER · mkraemer@physik.rwth-aachen.de

Bachelor of Science 2011–2014 RWTH Aachen University
1.3 – excellent · *Physics*
Thesis: *Energy measurement of cosmic rays with the transition radiation detector of AMS-02 on the International Space Station*
Reference: Henning GAST · henning@physik.rwth-aachen.de

Abitur 2010 Gymnasium Delbrück
1.0 – excellent · *German high school grade*

WORK EXPERIENCE

Research assistant 2012–2014 I. Physikalisches Institut B, RWTH Aachen University
 I worked at the AMS-02 group in Aachen where I was entrusted with data control as well as with physics analysis.
 Reference: Henning GAST · henning@physik.rwth-aachen.de

COMPUTER SKILLS

Advanced PYTHON, C, C++, MPI, OPENMP, HTML, PHP
Basic JAVASCRIPT, MYSQL, JAVA

AWARDS

Dean's List Award from the RWTH Aachen University for the academic year 2011/2012 which is granted to the best five percent of all students.

ADDITIONAL SKILLS

Languages GERMAN · mother tongue
 ENGLISH · fluent

Interests Sailing (dinghy racing, board member of the [German](#) and [International FJ class](#))
 Skiing
 Hiking

October 4, 2022

PUBLICATIONS

- A. Widmark, M. Korsmeier and T. Linden, *Weighing the Local Interstellar Medium using Gamma Rays and Dust*, [2208.11704](#)
- L. Orusa, M. Di Mauro, F. Donato and M. Korsmeier, *New determination of the production cross section for secondary positrons and electrons in the Galaxy*, *Phys. Rev. D* **105** (2022) 123021 [[2203.13143](#)]
- M. Korsmeier, E. Pinetti, M. Negro, M. Regis and N. Fornengo, *Flat-spectrum Radio Quasars and BL Lacs Dominate the Anisotropy of the Unresolved Gamma-Ray Background*, *Astrophys. J.* **933** (2022) 221 [[2201.02634](#)]
- M. Korsmeier and A. Cuoco, *Testing the universality of cosmic-ray nuclei from protons to oxygen with AMS-02*, *Phys. Rev. D* **105** (2022) 103033 [[2112.08381](#)]
- M. Korsmeier and A. Cuoco, *Implications of Lithium to Oxygen AMS-02 spectra on our understanding of cosmic-ray diffusion*, *Phys. Rev. D* **103** (2021) 103016 [[2103.09824](#)]
- F. Kahlhoefer, M. Korsmeier, M. Krämer, S. Manconi and K. Nippel, *Constraining dark matter annihilation with cosmic ray antiprotons using neural networks*, *JCAP* **12** (2021) 037 [[2107.12395](#)]
- M. Korsmeier and A. Cuoco, *The role of systematic uncertainties on our understanding of cosmic-ray diffusion: An analysis of AMS-02 data from Lithium to Oxygen*, *PoS ICRC2021* (2021) 176

- J. Heisig, M. Korsmeier and M. W. Winkler, *Dark matter or correlated errors: Systematics of the AMS-02 antiproton excess*, *Phys. Rev. Res.* **2** (2020) 043017 [2005.04237]
- P. von Doetinchem et al., *Cosmic-ray antinuclei as messengers of new physics: status and outlook for the new decade*, *JCAP* **08** (2020) 035 [2002.04163]
- S. Manconi, M. Korsmeier, F. Donato, N. Fornengo, M. Regis and H. Zechlin, *Testing gamma-ray models of blazars in the extragalactic sky*, *Phys. Rev. D* **101** (2020) 103026 [1912.01622]
- A. Cuoco, J. Heisig, L. Klamt, M. Korsmeier and M. Krämer, *Scrutinizing the evidence for dark matter in cosmic-ray antiprotons*, *Phys. Rev.* **D99** (2019) 103014 [1903.01472]
- M. Korsmeier, F. Donato and M. Di Mauro, *Production cross sections of cosmic antiprotons in the light of new data from the NA61 and LHCb experiments*, *Phys. Rev.* **D97** (2018) 103019 [1802.03030]
- M. Korsmeier, F. Donato and N. Fornengo, *Prospects to verify a possible dark matter hint in cosmic antiprotons with antideuterons and antihelium*, *Phys. Rev.* **D97** (2018) 103011 [1711.08465]
- A. Cuoco, J. Heisig, M. Korsmeier and M. Krämer, *Constraining heavy dark matter with cosmic-ray antiprotons*, *JCAP* **1804** (2018) 004 [1711.05274]
- A. Cuoco, J. Heisig, M. Korsmeier and M. Krämer, *A combined dark matter study of AMS-02 antiprotons and Fermi-LAT gamma rays*, *PoS EPS-HEP2017* (2017) 065 [1711.06460]
- A. Cuoco, J. Heisig, M. Korsmeier and M. Krämer, *Probing dark matter annihilation in the Galaxy with antiprotons and gamma rays*, *JCAP* **1710** (2017) 053 [1704.08258]
- F. Donato, M. Korsmeier and M. Di Mauro, *Prescriptions on antiproton cross section data for precise theoretical antiproton flux predictions*, *Phys. Rev.* **D96** (2017) 043007 [1704.03663]
- A. Cuoco, M. Krämer and M. Korsmeier, *Novel Dark Matter Constraints from Antiprotons in Light of AMS-02*, *Phys. Rev. Lett.* **118** (2017) 191102 [1610.03071]
- M. Korsmeier and A. Cuoco, *Galactic cosmic-ray propagation in the light of AMS-02: Analysis of protons, helium, and antiprotons*, *Phys. Rev.* **D94** (2016) 123019 [1607.06093]
- A. Obermeier and M. Korsmeier, *Cross-calibration of the Transition Radiation Detector of AMS-02 for an Energy Measurement of Cosmic-Ray Ions*, *Adv. Space Res.* **55** (2015) 716 [1411.3329]

TALKS AT CONFERENCES OR WORKSHOPS AND SEMINARS

- TeVPA 2022 (Kingston CA, August 2022) *Testing the universality of cosmic-ray nuclei from protons to oxygen with AMS-02*
- Moriond (La Thuile, March 2022) *Testing the universality of cosmic-ray nuclei from protons to oxygen with AMS-02*
- Seminar in Turin (Turin, January 2022) *Testing the universality of cosmic-ray nuclei from protons to oxygen with AMS-02*
- Partikeldagarna 2021 (Göteborg, November 2021) *Constraining dark matter annihilation with cosmic-ray antiprotons using neural networks*
- Solar Modulation and Dark Matter Workshop (Trieste, November 2021) *Implications of Li to O data of AMS-02 on our understanding cosmic-ray propagation*
- Paris-Saclay AstroParticle Symposium (Paris, October 2021) *Implications of Li to O data of AMS-02 on our understanding cosmic-ray propagation*
- ICRC 2021 (online, July 2021) *Implications of Li to O data of AMS-02 on our understanding cosmic-ray propagation*
- EuCAPT Symposium (online, May 2021) *Implications of Li to O data of AMS-02 on our understanding cosmic-ray diffusion*
- XSCRC 2019 (CERN, November 2019) *Antiproton production cross sections*
- LAN2019 (Leiden, October 2019) *Scrutinizing the evidence for dark matter in cosmic-ray antiprotons*
- Cosmo19 (Aachen, September 2019) *Scrutinizing the evidence for dark matter in cosmic-ray antiprotons*
- Dbar19 (Los Angeles, March 2019) *Scrutinizing the evidence for dark matter in cosmic-ray antiprotons*
- Dbar19 (Los Angeles, March 2019) *Prospects to find cosmic-ray antinuclei and the impact of cross section uncertainties*
- TeVPA (Berlin, August 2018) *Prospects to find dark matter with cosmic-ray antiprotons and antideuterons*
- Seminar at LAPTh (Annecy, November 2018) *Uncertainties of secondary antiproton production in cosmic rays*
- DSU18 (Annecy, June 2018) *Prospects to verify a possible dark matter hint in cosmic antiprotons with antideuterons and antihelium*
- Cortona (Cortona, May 2018) *Convegno nazionale di fisica teorica: Production cross sections of cosmic antiprotons*
- Moriond EW (La Thuile, March 2018) *Prescriptions on antiproton cross section data for precise theoretical antiproton flux predictions*
- XSCRC 2017 (CERN, March 2017) *Antiprotons production cross sections: Precision requested in the light of AMS data*
- TeVPa 2016 (CERN, September 2016) *Global analysis of cosmic-ray propagation in the light of AMS-02 and the impact on indirect detection of dark matter*