

Curriculum Vitae

Prof. Dr. Kevin Kröninger is a particle physicist with many years of experience in data analysis and semiconductor detector development. He has strong interests in technology transfer to other fields of research, in particular to medical physics and dosimetry. He is an expert in statistical data analysis and the development of complex statistical tools.

Personal Data

Title	Prof. Dr.
First name	Kevin
Name	Kröninger
Current position	Full professor (W3)
Current institution, country	Department of Physics, TU Dortmund University, Germany
Identifiers/ORCID	0000-0001-9873-0228

Qualifications and Career

Stages	Periods and Details
Degree programme	Physics, 1998 – 1999, University of Göttingen, Germany Physics, 1999 - 2004, University of Bonn, Germany Physics, 2004, Northeastern University, Boston
Doctorate	2005 - 2007, Prof. Dr. A. Caldwell, Particle Physics, TU Munich, Germany, in collaboration with the Max Planck Institute for Physics, Munich, Germany
Stages of academic/professional career	Since 2014, Full Professor (W3), Department of Physics, TU Dortmund University 2013 – 2014, Interim professorship (W2), University of Göttingen 2012, Interim professorship (W3), University of Siegen 2012: Habilitation in Physics (Particle Physics, Prof. Dr. Arnulf Quadt) 2007 – 2014, Postdoctoral researcher (“Akademischer Rat”), University of Göttingen

Supplementary Career Information

2 children (born 2011 and 2015)

Engagement in the Research System

Since 2022: Spokesperson of the Erasmus Mundus Joint Master IMAPP
 Since 2022: SFB1491: PI of subproject F4
 Since 2020: Dean of the Department of Physics, TU Dortmund University
 Since 2020: Spokesperson of the MERCUR-funded graduate school
 “Präzisionsprotonentherapie” – Praxisbezogene Physik und Chemie an der
 Schnittstelle zur Medizin“
 2016 – 2020: Vice-Dean of the Department of Physics, TU Dortmund University
 Since 2007: Varying responsibilities within the ATLAS collaboration, e.g. three subgroup
 convenorships in the top-quark working group, member of the ATLAS physics
 office, member of the publication committee
 Since 2007: Member of the ATLAS collaboration
 2005 – 2007: Member of the GERDA collaboration

Reviewer for

- Journals: American Journal of Engineering and Applied Sciences, Astroparticle physics, European Physical Journal C, Physics Letters B, Physical Review D
- Funding agencies: DFG, Canada Foundation for Innovation

Major third-party funds (past 3 years, >100 kEuro):

- BMBF, 2023 – 2026, Verbundprojekt 05D2022 - KISS: Künstliche Intelligenz zur schnellen Simulation von wissenschaftlichen Daten. Teilprojekt 7, 281 k€
- Erasmus+, 2022 – 2028, Erasmus Mundus Joint Master IMAPP, 4,495 k€ (total funding, spokesperson)
- MKW NRW, 2022 – 2024, Digitales GWP-Curriculum.nrw, 484 k€ (total funding, spokesperson)
- DFG, 2022 – 2025, SFB 1491 - F04, 215 k€
- DFG, 2021 - 2026, PUNCH4NFDI - Teilchen, Universum, Kerne und Hadronen für die NFDI, 377 k€
- BMBF, 2021 – 2024, Verbundprojekt 05H2021 - Fortentwicklung des ATLAS-Experiments zum Einsatz am HL-LHC: Phase-II-Ausbau des Spurdetektors bei ATLAS, 1,000 k€
- BMBF, 2021 – 2024, Verbundprojekt 05H2021 - R&D DETEKTOREN (Neue Trackingtechnologien): Entwicklung von aktiven und passiven mikrostrukturierten CMOS-Sensoren, 215 k€
- BMBF, 2021 – 2024, Verbundprojekt 05H2021 (ErUM-FSP T02) - Run 3 von ATLAS am LHC: Betrieb des ATLAS-Experiments und Analyse, 770 k€
- DFG, 2021 – 2024, TopFlav – Top-Flavor-Kopplungen am FCC-ee, 217 k€
- DFG, 2020 – Halbautomatischer Wafer-Messplatz, 442 k€
- DFG, 2020 - 2022, Lux Ex Machina - eine Anwendung von maschinellem Lernen auf die Entfaltung von Glühkurven, 212 k€.
- MERCUR, 2020 – 2023, Präzisionsprotonentherapie – Praxisbezogene Physik und Chemie an der Schnittstelle zur Medizin“, 590 k€ (total funding, spokesperson)
- BMBF, 2019 – 2021, Verbundprojekt 05H2018 - Ausbau von ATLAS am LHC. Betrieb des ATLAS-Experiments und Analyse, 410 k€
- BMBF, 2019 - 2021, FIS-Projekt 05H2018 - Fortentwicklung des ATLAS-Experiments zum Einsatz am HL-LHC, 1,970 k€
- DFG, 2018 – 2021, BAT 2.0: Entwicklung und Anwendung, 193 k€

Supervision of Researchers in Early Career Phases

Since 2014, 17 doctoral researchers, about 150 Bachelor students and more than 100 Master students have successfully finished their theses under the supervision of my group. One habilitation was defended in 2019 (now professor).

Scientific Results

Category A

1. G. Aad, ..., **K. Kröninger**, ..., L. Zwalinski [ATLAS Collaboration], *Evidence for $t\bar{t}\bar{t}\bar{t}$ production in the multilepton final state in proton–proton collisions at $\sqrt{s}=13$ TeV with the ATLAS detector*, Eur. Phys. J. C **80** (2020) 1085, doi: 10.1140/epjc/s10052-020-08509-3
2. G. Aad, ..., **K. Kröninger**, ..., L. Zwalinski [ATLAS Collaboration], *Search for flavour-changing neutral currents in processes with one top quark and a photon using 81 fb⁻¹ of pp collisions at $\sqrt{s} = 13$ TeV with the ATLAS experiment*, Phys. Lett. B **800** (2019) 135082, doi: 10.1016/j.physletb.2019.135082
3. G. Aad, ..., **K. Kröninger**, ..., L. Zwalinski [ATLAS Collaboration], *Observation of Higgs boson production in association with a top quark pair at the LHC with the ATLAS detector*, Phys. Lett. B **784** (2018) 173, doi: 10.1016/j.physletb.2018.07.035
4. **K. Kröninger**, A. Meyer, P. Uwer, *Top-quark physics at the LHC*, in T. Schörner-Sadenius (ed.), *The Large Hadron Collider – Harvest of Run 1*, Springer, 2015, doi: 10.1007/978-3-319-15001-7
5. J. Erdmann, S. Guindon, **K. Kröninger**, et al., *A likelihood-based reconstruction algorithm for top-quark pairs and the KL Fitter framework*, Nucl. Instrum. Meth. A **748** (2014) 18, doi: 10.1016/j.nima.2014.02.029
6. O. Behnke, **K. Kröninger**, T. Schörner-Sadenius, G. Schott (eds.), *Data Analysis in High Energy Physics - A practical guide to statistical methods*, Wiley-VCH, Weinheim, 2013, doi: 10.1002/9783527653416
7. G. Aad, ..., **K. Kröninger**, ..., L. Zwalinski [ATLAS Collaboration], *Measurement of the W boson polarization in top quark decays with the ATLAS detector*, JHEP **1206** (2012) 088
8. G. Aad, ..., **K. Kröninger**, ..., L. Zwalinski [ATLAS Collaboration], *Observation of a new particle in the search for the Standard Model Higgs boson with the ATLAS detector at the LHC*, Phys. Lett. B **716** (2012) 1, doi: 10.1016/j.physletb.2012.08.020
9. Caldwell, D. Kollar, **K. Kröninger**, *BAT: The Bayesian analysis toolkit*, Comput. Phys. Commun. **180** (2009) 2197, doi: 10.1016/j.cpc.2009.06.026
10. V.M. Abazov, ..., **K. Kröninger**, ..., E.G. Zverev [D0 Collaboration], *Measurement of the top quark mass in the lepton+jets final state with the matrix element method*, Phys. Rev. D **74** (2006) 092005, doi: 10.1103/PhysRevD.74.092005

Category B

1. GitHub repository, <https://github.com/bat/bat>, project responsibility for the development of the initial version of the software package BAT.
2. GitHub repository, <https://github.com/bat/BAT.jl>, project responsibility for the development of the Julia-based software package BAT.jl.

Academic Distinctions

- Award for Internationalization in Teaching, TU Dortmund University (2022)
- Robert-Wichard-Pohl medal for distinguished teaching activities, Faculty of Physics, University of Göttingen (2013)
- Student's award for distinguished teaching activities, Department of Physics, University of Siegen (2012)
- Otto Hahn Medal for young scientists of the Max Planck Society (2007)

Other Information

n.a.

Data protection and consent to the processing of optional data

If you provide voluntary information (marked as optional) in this CV, your consent is required. Please confirm your consent by checking the box below.

☒ **I expressly consent to the processing of the voluntary (optional) information, including “special categories of personal data”¹ in connection with the DFG’s review and decision-making process regarding my proposal.** This also includes forwarding my data to the external reviewers, committee members and, where applicable, foreign partner organisations who are involved in the decision-making process. To the extent that these recipients are located in a third country (outside the European Economic Area), I additionally consent to them being granted access to my data for the above-mentioned purposes, even though a level of data protection comparable to EU law may not be guaranteed. For this reason, compliance with the data protection principles of EU law is not guaranteed in such cases. In this respect, there may be a violation of my fundamental rights and freedoms and resulting damages. This may make it more difficult for me to assert my rights under the General Data Protection Regulation (e.g. information, rectification, erasure, compensation) and, if necessary, to enforce these rights with the help of authorities or in court.

I may **revoke** my consent in whole or in part at any time – with effect for the future, freely and without giving reasons – vis-à-vis the DFG (postmaster@dfg.de). The lawfulness of the processing carried out up to that point remains unaffected. Insofar as I transmit “special categories of personal data” relating to third parties, I confirm that the necessary legitimation under data protection law exists (e.g. based on consent).

I have taken note of the DFG’s Data Protection Notice relating to research funding, which I can access at www.dfg.de/privacy_policy and I will forward it to such persons whose data the DFG processes as a result of being mentioned in this CV.

¹ Special categories of personal data are those “revealing racial or ethnic origin, political opinions, religious or philosophical beliefs, or trade union membership, and (...) genetic data, biometric data for the purpose of uniquely identifying a natural person, data concerning health or data concerning a natural person’s sex life or sexual orientation” (Article 9(1) GDPR).