Curriculum Vitae

Prof. Dr. Frank Simon

Karlsruhe Institute of Technology Institute for Data Processing and Electronics Hermann-von-Helmholtz-Platz 1 76344 Eggenstein-Leopoldshafen, Germany Phone: +49 721 608 25612 e-mail: frank.simon@kit.edu ORCiD: 0000-0002-5978-0289

CAREER

10/2022-	Full Professor and Director of the Institute for Data Processing and Electronics, Karlsruhe Institute
present	of Technology, Karlsruhe, Germany.
	Pursuing a broad technology-oriented research portfolio in particle and astroparticle physics, quan- tum technology, energy research and information, funded by the Helmholtz Association supple- mented with significant third-party funds. Approximately 45 permanent staff members, and a total of more than 130 institute members, composed of scientists, engineers, technical and administrative personnel, students, apprentices and interns.
10/2007-	Research Group Leader at Max-Planck-Institute for Physics, Munich, Germany.
09/2022	Competitive tenure track, granted tenure as senior staff scientist and group leader in 2011.
	Physics studies and detector development for e^+e^- Higgs Factories. Precision measurements in flavour physics, detector construction and operation, beam background monitoring and protection with the Belle and Belle II experiments.
05/2005 -	Postdoctoral Associate and Senior Postdoctoral Associate at the
09/2007	Massachusetts Institute of Technology, Laboratory for Nuclear Science, Cambridge, MA, USA.
2002 - 2005	Graduate Research Assistant at Max-Planck-Institute for Physics, Munich, Germany.
2000 - 2001	Research stay at CERN, Geneva, Switzerland.

EDUCATION

02/2005	Doctorate (Dr. rer. nat.) from TU München, Germany.
11/2001	Diplom in Physics from TU München, Germany.
10/1998	Vordiplom in Physics from TU Darmstadt, Germany.
1996 – 1997	Mandatory basic military service in the German army.
07/1996	Abitur from Edith-Stein-Schule Darmstadt, Germany.

RESEARCH PROFILE

Particle physics, technology development and instrumentation.

SCIENTIFIC MANAGEMENT & COORDINATION (SELECTION)

2024 - 2027	Coordinator of the BMBF-funded collaborative research project High-D-Calo, developing calorime- ters for future experiments.
since 2023	Co-chair of the DRD7 proto-collaboration, an R&D collaboration on electronics and on-detector processing, forming in response to the 2021 ECFA Detector R&D Roadmap.
since 2021	Member of the International Advisory Committee of the ECFA Study Group on Physics, Experiment and Detector for a future Higgs Factory.
since 2021	Co-convener of the FCC Physics Program working group.
since 2020	Chair of the Institute Board of the CALICE Collaboration.
since 2020	Regional Shift Manager of the Belle II Collaboration.
since 2016	Member of the Executive Team of the CLIC Detector & Physics (CLICdp) Collaboration.
since 2016	Member of the Detector Board of the Hemholtz Alliance "Physics at the Terascale".
2015 - 2019	Spokesperson of the CALICE Collaboration.
2014 - 2021	Member of the Linear Collider Collaboration Physics & Detectors executive board.
2014 - 2020	Coordinator of the calorimetry workpackage in the EU Horizon 2020 project AIDA-2020.
2013 - 2015	First chair of the Institute Board of the CLIC Detector & Physics Study.

COMMISSIONS OF TRUST (SELECTION)

since 2019	Chair of the CERN LHC Experiments Committee (LHCC). Member of the CERN Scientific Policy Committee and of the CERN Research Board.
since 2024	Associate Editor of European Physics Journal C.
since 2023	Ombudsperson for good scientific practice at KIT.
since 2022	Elected member of the KIT Senate.
since 2022	Member of the International Advisory Board of the FZU – Institute of Physics of the Czech Academy of Sciences.
2021 - 2027	Member of "BMBF Gutachterausschuss Teilchen" (Review panel for particle and nuclear physics grants of BMBF, Germany) for two funding periods (2021-24, 2024-27).
since 2021	Elected member of the German Committee for Elementary Particle Physics (KET).
since 2020	Member of the Particle Data Group.
2020, 2022	Remote expert referee for the European Research Council.
2017 - 2019	Chair of the CERN LHC Resources Scrutiny Group. Reviewing operations budgets and phase 2 upgrade plans of LHC experiments. Ex-officio member of CERN Resources Review Board and core member of the CERN LHC Experiments Committee Upgrade Cost Group.
2017-2023	Member of Advisory Board of the CERN research activities of the Czech Republic.
since 2013	Moderator of arXiv.org.
since 2012	Member of review panels for BMBF, Germany; Fermilab and DOE, USA; IN2P3 and CNRS, France; STFC, UK; MOST, China.
since 2007	Regular reviewer for several journals, including the European Physics Journal C, Physics Letters B and Nuclear Instruments and Methods A.

ORGANISATION OF SCIENTIFIC EVENTS (SELECTION)

2024	Organizing Committee, German Future Collider @ CERN Strategy Workshop 2024, Bonn, Germay.
2024	International Program Committee, Linear Collider Workshop 2024, Tokyo, Japan.
2024	Program Committee, FCC Physics Workshop 2024, Annecy, France.
2023	Organizing and International Scientific Committee, Future Accelerator Workshop 2023, Corfu, Greece.
2023	Program Committee, 2023 DPG Spring Meeting on Particle Physics, Dresden, Germany.
2019	Program Committee, Calorimetry for the High Energy Frontier (CHEF) 2019, Fukuoka, Japan.
2019	Program Committee and Local Organizer, DUNE Multi-Purpose Detector Workshop 2019, DESY, Germany.
2019	Program Committee, Linear Collider Workshop 2019, Sendai, Japan.
2018	Main organiser of the Terascale Detector Workshop 2018, Munich, Germany.
2017	Program Committee, Calorimetry for the High Energy Frontier (CHEF) 2017, Lyon, France.
2016	Topic Convener "Calorimetry", IEEE Nuclear Science Symposium, Strasbourg, France.
2016	Co-organizer of the KET Workshop on Future e^+e^- Colliders, Munich, Germany.
2015	Main organizer of the CALICE Collaboration Meeting, Munich, Germany.
since 2014	Advisory Board & co-organizer of up to now five Top at Lepton Colliders conferences.
2014	Topic Convener "High Energy Physics", IEEE Nuclear Science Symposium, Seattle, WA, USA.
2014	Physics Advisory Committee and Track Convener "New concepts and techniques for accelerators and particle detectors", PANIC 2014, Hamburg, Germany.

TEACHING (SELECTION)

since 2022 Lecture "Electronics for Physicists" for master students at KIT.

2018–2022 Lectures for 3^{*rd*} and 4^{*th*} year physics master students at TU München, "Particle Physics at Colliders and in the High Energy Universe" and "Particle Physics with Accelerators and Natural Sources".

2008-2018	Lectures for 3 rd and 4 th year physics master students at TU München, "Particle Physics with high-
	energy Colliders (Higgs & Co)" and "Particle Physics with cosmic and ground-based Accelerators".
10/2016	"Highlight Lecture" on Physics for new incoming Bachelor students at TU München, invited by the TUM mathematics, physics and informatics student council.
since 2008	Lectures at different international particle physics schools and summer student programs on topics
	of experimental physics and HEP instrumentation.

STUDENT SUPERVISION

Supervisor of PhD, MSc and BSc students in physics and electrical engineering at KIT. Supervised a total of 14 PhD theses, 15 MSc / Diploma theses and 4 BSc theses at the Max-Planck-Institute for Physics, with students graduating at the Technical University Munich (TUM) and at the University of Munich (LMU). External reviewer for PhD theses at the University of Lyon and the University of Utrecht.

SELECTED PUBLICATIONS

A full list of publications also including conference papers, design reports and other non-peer-reviewed publications is available at https://inspirehep.net/author/profile/F.Simon.1.

Review Articles

- F. Sefkow and F. Simon, "Calorimeters Introduction" and "Calorimeters Hadronic Calorimeters", in R. L. Workman *et al.* [Particle Data Group], "Review of Particle Physics," PTEP **2022**, 083C01 (2022).
- F. Simon, "Silicon Photomultipliers in Particle and Nuclear Physics," Nucl. Instrum. Meth. A 926, 85 (2019).
- G. Moortgat-Pick et al., "Physics at the e+ e- Linear Collider," Eur. Phys. J. C 75, 371 (2015).
- N. Brambilla et al., "Heavy quarkonium: progress, puzzles, and opportunities," Eur. Phys. J. C 71, 1534 (2011).

Higgs Factory Physics

- A. Abada *et al.* [FCC Collaboration], "FCC Physics Opportunities: Future Circular Collider Conceptual Design Report Volume 1," Eur. Phys. J. C **79**, 474 (2019).
- H. Abramowicz *et al.*, [CLICdp Collaboration], "Top-Quark Physics at the CLIC Electron-Positron Linear Collider," JHEP **11**, 003 (2019).
- H. Abramowicz *et al.*, [CLICdp Collaboration], "Higgs Physics at the CLIC Electron-Positron Linear Collider," Eur. Phys. J. C **77**, 475 (2017).
- K. Seidel, F. Simon, M. Tesar and S. Poss, "Top quark mass measurements at and above threshold at CLIC," Eur. Phys. J. C 73, 2530 (2013).

CALICE and Highly Granular Calorimeters

- A. White *et al.* [CALICE Collaboration], "Design, construction and commissioning of a technological prototype of a highly granular SiPM-on-tile scintillator-steel hadronic calorimeter," JINST **18**, P11018 (2023).
- C. Adloff *et al.* [CALICE Collaboration], "The Time Structure of Hadronic Showers in highly granular Calorimeters with Tungsten and Steel Absorbers," JINST **9**, P07022 (2014).
- C. Adloff *et al.* [CALICE Collaboration], "Hadronic energy resolution of a highly granular scintillator-steel hadron calorimeter using software compensation techniques," JINST **7**, P09017 (2012).
- F. Simon, C. Soldner, "Uniformity Studies of Scintillator Tiles directly coupled to SiPMs for Imaging Calorimetry," Nucl. Instrum. Meth. A620, 196-201 (2010).

Belle II and related methods

- T. M. G. Kraetzschmar, F. M. Krinner, M. Pfaff, N. K. Rad, A. Rostomyan, L. Schlechter and F. Simon, "Generalised Known Kinematics (GKK): an approach for kinematic observables in pair production events with decays involving invisible particles," JHEP **07**, 101 (2023).
- I. Adachi *et al.* [Belle-II Collaboration], "Search for Lepton-Flavor-Violating τ Decays to a Lepton and an Invisible Boson at Belle II," Phys. Rev. Lett. **130**, no.18, 181803 (2023).
- P. M. Lewis *et al.*, "First Measurements of Beam Backgrounds at SuperKEKB," Nucl. Instrum. Meth. A **914**, 69 (2019).

Reconstruction Techniques and Methods

- C. Graf and F. Simon, "Time-assisted energy reconstruction in a highly-granular hadronic calorimeter," JINST 17, P08027 (2022).
- P. Azzi, L. Gouskos, M. Selvaggi and F. Simon, "Higgs and top physics reconstruction challenges and opportunities at FCC-ee," Eur. Phys. J. Plus 137, 39 (2022).
- H. L. Tran, K. Krüger, F. Sefkow, S. Green, J. Marshall, M. Thomson and F. Simon, "Software compensation in Particle Flow reconstruction," Eur. Phys. J. C 77, 698 (2017).

DUNE

- A. Abed Abud *et al.* [DUNE Collaboration], "Deep Underground Neutrino Experiment (DUNE) Near Detector Conceptual Design Report," Instruments **5**, 31 (2021).
- L. Emberger and F. Simon, "A highly granular calorimeter concept for long baseline near detectors," J. Phys. Conf. Ser. **1162**, 012033 (2019) [arXiv:1810.03677 [physics.ins-det]].

Smaller Projects

- A. Caldwell *et al.* [MADMAX Working Group], "Dielectric Haloscopes: A New Way to Detect Axion Dark Matter," Phys. Rev. Lett. **118**, 091801 (2017).
- A. Caldwell, K. Lotov, A. Pukhov, F. Simon, "Proton-driven plasma-wakefield acceleration", Nature Physics 5, 363 (2009).

STAR

- B. I. Abelev *et al.* [STAR Collaboration], "Longitudinal double-spin asymmetry and cross section for inclusive neutral pion production at midrapidity in polarized proton collisions at $\sqrt{s} = 200$ GeV," Phys. Rev. D 80, 111108(R) (2009).
- F. Simon *et al.*, "Development of Tracking Detectors with industrially produced GEM Foils," IEEE Trans. Nucl. Sci. **54**, 2646 (2007).
- J. Adams *et al.* [STAR Collaboration], "Evidence from d + Au measurements for final-state suppression of high p_T hadrons in Au + Au collisions at RHIC", Phys. Rev. Lett. **91**, 072304 (2003).

COMPASS

• M. C. Altunbas *et al.*, "Construction, test and commissioning of the triple-GEM tracking detector for COM-PASS", Nucl. Instrum. Meth. A **490**, 177 (2002).

Book Chapters

• F. Sefkow and F. Simon, "Calorimeters". In: Fleck, I., Titov, M., Grupen, C., Buvat, I. (eds) "Handbook of Particle Detection and Imaging", Springer (2021), https://doi.org/10.1007/978-3-319-93785-4_53.