curriculum vitæ

Personal information

Name	Marius Köppel
Date of Birth	03.09.1992 in Bühl
Address	Hindenburgstraße 19, 55118 Mainz
E-Mail	koeppel.ma@googlemail.com

PostDoc

05/2024-today	PostDoc at ETH, Zürich Topic: focussing on experimental particle physics and machine learning, exploring the muon decay via the Mu3e Experiment, building real time neural network trigger systems for CMS and advocating for algorithmic fairness Group: Prof. Dr. Rainer Wallny

Studies

11/2019-today	PhD Student in Physics, Johannes Gutenberg-University, Mainz Topic: Detector integration and Development of an FPGA-Based Readout System for the Mu3e Data Acquisition Group: Prof. Dr. Niklaus Berger
04/2017-10/2019	Master Physics, Johannes Gutenberg-University, Mainz Topic: Development of an FPGA based readout system for the Mu3e filter farm Group: Prof. Dr. Niklaus Berger
10/2016-03/2017	Supplementary study of Applied Culture Science, Karlsruhe Institute of Technology, Karlsruhe
10/2012-03/2017	Bachelor Physics, Karlsruhe Institute of Technology, Karlsruhe Topic: Studies on jet energy corrections of subjets in the search for Higgs production in association with a top quark pair (CMS) Group: Prof. Dr. Ulrich Husemann
09/2003-06/2012	Abitur, Windeck Gymnasium, Bühl

Studies abroad

02/2018-07/2018	Semester abroad, University of Trento, Trento – Italy
09/2014-07/2015	Year abroad, Ege University, Izmir – Turkey

Summer-schools

08/2022	PSI Zuoz Summer School on Particle Physics, Zuoz – Switzerland
02/2022	14th Terascale Detector Workshop 2022, online
09/2021	MPA Summer School on Fundamental Interactions in Particle, Hadron and Nuclear Physics, online
09/2020	MPA Retreat, online
08/2017-09/2017	Practical course in Particle Physics at Paul-Scherrer-Institut, Villigen – Switzerland
08/2016	BSCG Summer School, Bad Honnef – Germany

08/2015 BIT-TU9 Summer School, Peking – China

Research experience

01/2018-10/2018 Research assistant, Johannes Gutenberg-University, Mainz
Topic: Development of neuronal network based ranking algorithm
Group: Prof. Dr. Stefan Kramer

05/2017-10/2017 Research assistant, Johannes Gutenberg-University, Mainz
Topic: High performance computing support
Group: Prof. Dr. Johannes Henn

Teaching experience

04/2021-10/2021 Exercise leader FPGA programming, Johannes Gutenberg-University, Mainz

04/2020-10/2020 Exercise leader computer in science, Johannes Gutenberg-University, Mainz

10/2019-04/2020 Exercise leader Experimental Physics 4, Johannes Gutenberg-University, Mainz

10/2019-04/2020 Head assistant Experimental Physics 1 for Chemists, Johannes Gutenberg-University, Mainz

04/2018-10/2019 Head assistant Electronics for Physicists, Johannes Gutenberg-University, Mainz

04/2018-10/2019 Exercise leader Experimental Physics 5b, Johannes Gutenberg-University, Mainz

04/2019-10/2019 Exercise leader Experimental Physics 2, Johannes Gutenberg-University, Mainz

10/2018-04/2019 Exercise leader Experimental Physics 2, Johannes Gutenberg-University, Mainz

10/2018-04/2019 Exercise leader Experimental Physics 1, Johannes Gutenberg-University, Mainz

10/2018-04/2019 Exercise leader Experimental Physics 1 for Chemists, Johannes Gutenberg-University, Mainz

10/2016-04/2017 Tutor Practical course in Physics 2, Karlsruhe Institute of Technology

Conference Talks / Posters

21/03/2023 Firmware for the Mu3e Filter Farm
Talk at DPG Dresden

13/02/2023 Can machine learning solve the challenge of adaptive learning and the individualization of learning paths? A field experiment in an online learning platform
Talk at AAAI-Workshop Artificial Intelligence for Education

16/10/2022 The DAQ of the Mu3e Integration Runs
Poster at Physics of fundamental Symmetries and Interactions

04/08/2022 Data Flow in the Mu3e DAQ
Talk at 23nd IEEE Real Time Conference

04/08/2022 Matching Simulation and Data via Stochastically Quantized Neural Networks
Poster at 23nd IEEE Real Time Conference

30/06/2022 Ranking Creative Language Characteristics in Small Data Scenario
Talk at 13th International Conference on Computational Creativity

21/03/2022 Data Flow in the Mu3e Filter Farm
Talk at DPG Heidelberg

08/09/2021 Mu3e Integration Run 2021
Poster at International Workshop on Neutrinos from accelerators

17/03/2021 Hit Synchronisation in the Mu3e DAQ
Talk at DPG Dortmund

12/10/2020	Beam Tests of the Data Acquisition of the Mu3e Experiment Poster at 22nd IEEE Real Time Conference
14/09/2020	Learning to Rank Higgs Boson Candidates Invited talk at AKBP Machine Learning Seminar
26/03/2019	Learning to Rank Higgs Boson Candidates Talk at DPG Aachen
25/03/2019	Data flow in the Mu3e filter farm Talk at DPG Aachen

Publications

10/10/2023	Google Topics as a way out of the cookie dilemma? Computer & Recht 2023
07/06/2023	The Case for Correctability in Fair Machine Learning European Workshop on Algorithmic Fairness 2023
13/02/2023	Can machine learning solve the challenge of adaptive learning and the individualization of learning paths? A field experiment in an online learning platform AAAI 2023 Artificial Intelligence for Education
29/08/2022	Data Flow in the Mu3e DAQ IEEE Transactions on Nuclear Science
04/08/2022	Invariant Representations with Stochastically Quantized Neural Networks AAAI Conference on Artificial Intelligence 2023
30/07/2022	Learning to Rank Higgs Boson Candidates Nature Scientific Reports
30/06/2022	Ranking Creative Language Characteristics in Small Data Scenarios Proceedings of 13th International Conference on Computational Creativity
31/03/2022	Mu3e Integration Run 2021 The 22nd International Workshop on Neutrinos from Accelerators
07/02/2022	Fair Interpretable Representation Learning with Correction Vectors arXiv:2202.03078
07/05/2021	Fair Interpretable Learning via Correction Vectors ICLR-21 Workshop on Responsible AI
07/05/2021	Fair Group-Shared Representations with Normalizing Flows ICLR-21 Workshop on Responsible AI
05/03/2021	The Mu3e Data Acquisition IEEE Transactions on Nuclear Science
21/10/2021	Technical design of the phase I Mu3e experiment Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment
07/10/2020	Fair pairwise learning to rank 2020 IEEE 7th International Conference on Data Science and Advanced Analytics
30/04/2020	Pairwise Learning to Rank by Neural Networks Revisited: Reconstruction, Theoretical Analysis and Practical Performance Joint European Conference on Machine Learning and Knowledge Discovery in Databases
08/10/2019	Performance of the large scale HV-CMOS pixel sensor MuPix8 Journal of Instrumentation

01/10/2019	Data Flow in the Mu3e Filter Farm Master Thesis

Review Duties

10/2023	International Conference on Learning Representations 2024
08/2023	IEEE International Conference on Data Mining
05/2023	Conference and Workshop on Neural Information Processing Systems
05/2023	First Mainz and Friends Artifical Intelligence Conference
05/2023	IEEE NSS MIC RTSD
04/2023	Joint European Conference on Machine Learning and Knowledge Discovery in Databases
01/2023	Journal of Open Source Software
11/2022	IEEE Transactions on Nuclear Science
07/2022	IEEE ICDM 2022 22nd IEEE International Conference on Data Mining
11/2021	Artificial Intelligence and Statistics
03/2021	International Conference on Learning Representations Workshop on Responsible AI

Conference Chair

06/2024	Upcoming: European Workshop on Algorithmic Fairness
09/2023	First Workshop on ML, Law and Society www.lasoml.com

Work experience

03/2023-today	Co-Founder of AIRA Holding GmbH AIRA-LinkedIn
06/2017-01/2018	Working student, Netz98 GmbH (Project manager of an online shop and support of the development team)
04/2017-05/2017	Project Work for YPC Young Professionals Connect GmbH (Development of a job matching algorithm)
09/2015-04/2017	Working student, United Internet AG, Karlsruhe (Development of a framework based on Python for analysing existing customers)
09/2015-04/2017	Working student, United Internet AG, Karlsruhe (Analysis of survey studies and market monitoring in the mobile section)

Other qualifications

Language	German – native language English – fluent Turkish – intermediate Italian – basics
Program language	Python, VHDL, C++, C, JavaScript
Operating system	Linux and OS X
Frameworks	Tensorflow, Quartus, Vim, PyCharm, VueJS, ROOT, Geant4

Social Engagements

2019-today	Climbing instructor, Johannes Gutenberg-University Sport Club

05/2016-12/2019	Voluntary caregiver on trips for handicapped people, Reinbold-Schwarz Reisen
2014-2016	Obmann Ski, Karlsruhe Institute of Technology University Sport Club
2013-today	Ski instructor, Schneezeit Schneesportschule

Mainz, October 3, 2024