Andreas R. Weiden

Data Scientist

"The world is one big data problem" - Andrew McAfee

Born   December 10, 1989 in Cologne, Germany

Education

Jan 2015 –   **Doctoral Degree (Physics), Dr. sc. nat.**, *University Zurich.*
Aug 2020   Experimental Particle Physics and Data Analysis. Defense: 8/20/20

Oct 2012 –   **Master of Science (Physics)**, *Heidelberg University*, *Grade 1.3.*
Nov 2014   Specialization in Experimental Particle Physics

Oct 2009 –   **Bachelor of Science (Physics)**, *Heidelberg University*, *Grade 2.0.*
Aug 2012   Courses in electronics, particle physics and data analysis

Aug 2006 –   **Highschool Year Abroad** , *Ord Jr.-Sr. Highschool*, Ord, Nebraska, USA.
Apr 2007   Science Olympiad and Quizteam.

Aug 2000 –   **Abitur (Highschool Diploma)**, *Gymnasium Lechenich*, Erftstadt, *Grade 1.3.*
Jul 2009   Specialization in Physics and Mathematics

PhD Thesis

Title   *Inclusive Low-Mass Drell-Yan Cross-Section at LHCb at $\sqrt{s} = 8$ TeV*

Supervisors   Prof. Dr. Ulrich Straumann & Dr. Katharina Müller

Description   Data analysis aimed at a better understanding of the structure of the proton, specifically the sea-quark content. Used all data collected by the LHCb experiment in 2012, which offers a unique region in phase-space previously unexplored for this purpose. Employed a maximum-likelihood template fit, statistically corrected for the uncertainty of the templates. Exploration of usage of machine learning for analyses of this kind in the future with a Bachelor student. Worked on the absolute luminosity calibration needed to perform an absolute measurement of the cross-section.

Talks & Publications

2018   Talk at the International Conference on Beauty, Charm and Hyperon Hadrons in Peniche, Portugal

2017   Talk at the International Workshop on Multiple Partonic Interactions at the LHC in Shimla, India

2016   Young Scientist Talk at the Rencontres de Moriond in La Thuile, Italy

2015   Publication

2015   Talk at the International Conference of Physics Students in Zagreb, Croatia

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Experience

Vocational

2016 – 2019	**Liaison**, *CERN, LHCb experiment*, Electro-weak physics group. Contact person between the electroweak working group and the luminosity working group.
Oct 2017 – Aug 2018	**Piquet**, *CERN, LHCb experiment*, Shifts. Person responsible for the proper functionining of the Silicon Tracker sub-detector. On-call shifter for a whole week at a time, in order to be able to trouble-shoot problems 24/7.
Sep 2017 – Sep 2018	**Supervisor of bachelor thesis**, *University Zurich*. "Using a feed-forward neural network to identify Drell-Yan events at the LHCb experiment" (T. Neuer 2018)
Sep 2017, Jun 2018, 2019, 2020	**Lecturer**, *University Zurich*, Scientific Programming with Python. Scientific Programming with Python for advanced students. Lectures "Object-Oriented Programming" and "Data Visualisation and More".
May 2015 – Jul 2017	**Data Manager**, *CERN, LHCb experiment*, Shifts. Responsible for monitoring the detector and the proper data taking.
Jan 2015 – Aug 2018	**Tutor**, *University Zurich*, every semester. Fall semesters: Tutor for introductory physics courses both for physicis majors and minors. Spring semesters: Data analysis using Python.
Jul – Sep 2013	**Summer Student**, *H1*, Deutsches Elektronen-Synchrotron (DESY), Hamburg. Using the elastic $\gamma^* p \to J/\psi p$ cross-section to probe the small x gluon density. Fortran and C++.
Aug 2012, Feb 2013, Feb 2014	**Lab Course Tutor**, *Physics Institute*, Heidelberg University. Physics lab course for physicists (Aug 2012) and physics minors (Feb 2013, Feb 2014). Supervision during the experiments and evaluation of lab reports.

Miscellaneous

2019 – present	**Founding member/Member of the board**, *SwissPy*. Association offering basic and advanced Python courses to companies.
Dec 2013 – Nov 2015	**Treasurer**, *junge Deutsche Physikalische Gesellschaft (jDPG)*. Administration of finances for the german-wide jDPG, a working group of the DPG (German Physical Society). From Oct 2012 already Treasurer of the regional group in Heidelberg (member since Mar 2011) organizing excursions and seminars preparing physics students for jobs in research or in commerce.
Dec 2012 – Aug 2014	**Chairman**, *Local organization committee for the "International Conference of Physics Students" (ICPS) 2014*, Heidelberg. Annual conference for physics students which is entirely organized by students.

Computer skills

Basic	R, SQL, PHP, Fortran, Mathematica, Tensorflow, Flask
Intermediate	C++, HTML, LaTeX, Git, Microsoft Windows
Advanced	Python, numpy, pandas, ROOT, GNU/Linux

Languages

German	Mothertongue	
English	Fluent	*Cambridge Certificate in Advanced English (CAE), European Level C1, 2009*
Russian	Basic	*European Level B1*
Latin	Basic	*Latinum*