DAVID HANDL

EXPERIMENTAL PARTICLE PHYSICIST

🎁 Born in Austria, 26th May, 1989

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CORE COMPETENCIES

Excellent analytical skills of large-scale data · In-depth knowledge of advanced statistics and mathematics · Vital skills in computer science as well as strong expertise in programming languages such as C, C++ and Python, etc. · Excellent experience in the fundamentals of machine learning and libraries such as Keras and tensorflow, etc. · Substantial know-how to work collaboratively as a member of an international team · Very good education in fundamental physics and in-depth knowledge in particle physics · Proven leadership abilities during the technical supervision of undergraduate students · Strongly motivated, communicative and cooperative appearance

RESEARCH

May '16-Present   Ph.D. Student, Faculty of Physics, Ludwig-Maximilians-Universität München – Munich

As an ambitous member of the ATLAS Collaboration, I am actively contributing to the statistical data analysis of a search for supersymmetry in single lepton final states. I am studying the capability of novel deep learning algorithms to enhance the search sensitivity. In order to separate signal from background events, I developed a powerful classifier based on recurrent as well as deep neural networks. Apart from that, I investigated potential improvements of the missing transverse energy high level object trigger system. In addition, I spent six months of my research abroad at the European Organization for Nuclear Research (CERN) in Geneva, Switzerland, to get a detailed insight of internal operations and the work life at an international research environment. Since I am strongly dedicated in outreach affairs, I also took the chance to become an official visitor guide for several experiments and facilities, including the ATLAS underground cavern. During the technical supervision of serveral undergraduate students, I strengthened my leadership abilities. I am also a tutor for particle physics exercise courses at the LMU Munich and I am volunteering as a tutor at physics masterclasses.

Oct '14-Dec '15   Master Student, Institute of High Energy Physics – Vienna

As a master student I worked as an active member in a joint collaboration consisting of data analysis groups at the University of Athens, CERN, DESY Hamburg and the Institute of High Energy Physics in Vienna. We performed searches for supersymmetry in single lepton final states using 13 TeV data recorded by the CMS collaboration. I made significant contributions to the estimation of the dominant standard model backgrounds.

Sept-Oct 2014   Intern, Institute of High Energy Physics – Vienna

As an intern in the hardware group, I performed electrical tests of the readout electronics for the Belle II Silicon Vertex Detector. Several important quality coefficients of the readout chips were measured and a statistical evaluation was performed. Based on these tests faulty readout chips could be localised and were sorted out.

Oct-Dec 2013   Intern, Institute of High Energy Physics – Vienna

During my first internship at the Institute of High Energy Physics, I got involved in the data analysis group where I improved a search for supersymmetry using neural networks. Thus, I performed the parameter optimisation of neural networks and studied various performance measures in order to get a deeper understanding of the model evaluation.

PUBLICATIONS

Search for direct top squark pair production in the 3-body decay mode with a final state containing one lepton, jets, and missing transverse momentum in $\sqrt{s} = 13$ TeV pp collision data with the ATLAS detector, ATLAS Conference Note (`https://cds.cern.ch/record/2676594`)

Search for top squark pair production in final states with one isolated lepton, jets, and missing transverse momentum using $36\ fb^{-1}$ of $\sqrt{s} = 13$ TeV pp collision data with the ATLAS detector, in Journal of High Energy Physics (`DOI:10.1007/JHEP06(2018)108`)

Search for top squarks in final states with one electron or muon in $\sqrt{s} = 13$ TeV pp collisions with the ATLAS detector, in Proceedings of Science 2017 (`https://pos.sissa.it/314/699/pdf`)

TALKS AND POSTERS

Applications of Machine Learning techniques at the ATLAS collaboration, string_data18 Workshop, March 2018

Search for top squarks in final states with one electron or muon in $\sqrt{s} = 13$ TeV pp collisions with the ATLAS detector, EPS-HEP, July 2017

EDUCATION

August 2018   HADRON COLLIDER PHYSICS SUMMER SCHOOL AT FERMILAB

I entered one of the most prestigious summer schools about high energy physics at Fermilab, Batavia, Illinois.

2016-Present   LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN

Ph.D. candidate in Physics

2013-2016   VIENNA UNIVERSITY OF TECHNOLOGY

M.Sc. in Technical Physics

2009-2013   VIENNA UNIVERSITY OF TECHNOLOGY

B.Sc. in Technical Physics

COMPUTING SKILLS

C, C++, Python, keras, tensorflow, scikit-learn, MATLAB, ROOT, Linux, Git, Latex, MS Office

OTHER INFORMATION

Languages

GERMAN · Mothertongue

ENGLISH · Advanced

FRENCH · Basic (simple words and phrases only)

Interests

running · skiing · football · reading · cooking · programming · photography

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