



The **ATLAS group at the University of Freiburg (Prof. Karl Jakobs)** has openings for
two PhD positions.

Our group has long-standing experience in Higgs boson physics, studies of Supersymmetry (SUSY), Standard Model measurements and is also engaged in the operation of the ATLAS Semiconductor Tracker (SCT) and in upgrade projects on silicon strip detectors (ATLAS ITk). The focus of the activities of the successful applicants will be on the analysis of the complete LHC Run-2 data set and the preparation of Run 3.

A major topic of research in our group is the measurement of the couplings of the Higgs boson to Standard Model particles and the characteristics of Higgs boson production. These important measurements are also sensitive to potential signs of new physics. We are specifically investigating Higgs boson decays into a pair of W bosons or into a pair of tau leptons. These two final states have also good sensitivity to vector-boson-fusion production and Higgs boson production at the highest transverse momentum.

Another opportunity is the direct search for physics beyond the Standard Model. We are investigating models including Dark Matter candidates in final states featuring top quarks, for example from the decay of supersymmetric partners of the top quark, or from the decay of new mediators.

In both cases, the development and application of new analysis techniques, including machine learning, for event tagging and reconstruction, as well as the interpretation of these results in the context of e.g. Effective Field Theories or simplified models of theories beyond the Standard Model, are essential goals.

The successful applicant will be integrated into the Freiburg analysis team and supervised by experienced postdocs and senior researchers. Participation in detector operation (SCT) or in an ATLAS combined performance group, e.g. tau identification, is expected. Most of the research work will be carried out in Freiburg, with the possibility to spend up to one year at CERN. The PhD candidate will be integrated in the Freiburg Research and Training School on "*Mass and Symmetries after the discovery of the Higgs boson*".

Applications should be sent (in a single pdf file) to christina.skorek@physik.uni-freiburg.de until **30th November 2021** and should include a curriculum vitae, copies of certificates of degrees, a letter of motivation, a link to the master or diploma thesis (if available), and the names and contact addresses of two persons who could provide letters of reference.

Candidates are selected in accordance with the provisions of the AGG (*Allgemeines Gleichbehandlungsgesetz* - German General Equal Treatment Act). Applicants with disabilities (Schwerbehinderte Menschen) will be given preferential consideration in case of equal qualification. Information on the handling of personal data can be found at <http://www.zuv.uni-freiburg.de/service/stellenausschreibungen/datenschutz-bewerbungen/>.

Further information can be obtained from:
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