



The **ATLAS group at the University of Freiburg (Prof. Karl Jakobs/ Dr. Christian Weiser)** has openings for

two PhD students.

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 goal of the research in our group is the measurement of the couplings of the Higgs boson to other known particles, thereby constraining possible new physics scenarios. We are specifically investigating Higgs boson decays into a pair of W bosons, b quarks and tau leptons. One opportunity of research related to this is the precise measurement of the properties of the Higgs boson. The development and application of new analysis techniques as well as the interpretation of the results in the context of e.g. Effective Field Theories is a major goal.

Another opportunity is the direct search for physics beyond the Standard Model. We are specifically investigating models including dark matter candidates in final states featuring top quarks, for example from the decay of supersymmetric partners of the top quark. The development, refinement and application of top quark reconstruction and tagging techniques is central to this effort, as well as the interpretation of results in a wider model context with and without supersymmetry.

The successful applicant will be integrated into the Freiburg analysis team and supervised by experienced postdocs. Participation in detector operation (SCT) or in an ATLAS combined performance group (e.g. tau identification, flavour tagging) 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*".

The positions are available from **1 May 2020**.

Applications should be sent to christina.skorek@physik.uni-freiburg.de until **31 March 2020**, and should include a curriculum vitae, copies of certificates of degrees, a letter of motivation, a link to the master or diploma thesis, and the names and contact addresses of two persons who could provide letters of reference.

Further information can be obtained from:

Christian Weiser (Christian.Weiser@physik.uni-freiburg.de)