Contribution ID: **32** Type: **On-site planned, but remote also possible**

Search for high-mass Higgs bosons in the final state with b-quarks with CMS Run 2 data

The discovery of the Higgs boson in 2012 marked a major breakthrough for particle physics. Up to this date, precision measurements that followed have indicated that the found particle agrees with the Standard Model predictions. However, there is still room for an extended Higgs sector as predicted by theories beyond the Standard Model, including Supersymmetry or general Two Higgs Doublet models. These models feature additional Higgs bosons, and they also allow for a significantly enhanced coupling of the Higgs boson to b quarks.

The summer student will participate in an analysis that searches for heavy neutral Higgs bosons, which decay into two b quarks, using the full Run 2 dataset of the CMS experiment, with data collected in the years 2016-2018. This work involves the use of tools for the processing of the data and the extraction of signal peaks. It is expected that this analysis will improve significantly on all previous studies in this channel.

Field

B1: Particle physics analysis (software-oriented)

DESY Place

Hamburg

DESY Division

FH

DESY Group

CMS

Special Qualifications:

The student should have some familiarity with object-oriented programming, e.g. in C++. Ideally, also knowledge of Linux, Python, and the Root analysis tool would be helpful

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