Contribution ID: **57** Type: **not specified**

Search for heavy resonances in the H→ZZ channel with ATLAS

Wednesday, 2 October 2019 16:30 (10 minutes)

This talk presents a search for an additional heavy Higgs boson decaying to a pair of SM Z bosons, covering heavy Higgs boson masses in the range between 200 GeV and 2 TeV. To maximize the sensitivity the search combines the two fully leptonic decay channels of the ZZ pair –ZZ→ 4l and ZZ → llvv, where l stands for a charged light lepton. The 4l channel profits from the very good resolution of the invariant mass of the 4 leptons, but its branching fraction is low. In contrast, events in the llvv channel are more abundant, but the final state is not fully reconstructable. For the llvv analysis, the transverse mass calculated from the transverse momentum of the charged lepton pair and the missing transverse energy, is used as an observable. In both channels, kinematic selections are applied and separate categories for the gluon–gluon fusion (ggF) and vector-boson fusion (VBF) production mode of the additional Higgs boson are defined. The results are interpreted as limits on the production cross section for an additional heavy Higgs boson under the narrow and large width assumption.

Primary author: ATLAS, Collaboration (CERN)

Presenter: STAPF, Birgit Sylvia (Nikhef National institute for subatomic physics (NL))

Session Classification: Parallel