

Contribution submission to the conference Heidelberg 2022

Studies of di-Higgs production at the FCC-hh in the $bbZZ(\ell\nu\nu)$ final state — •KEVIN LAUDAMUS — DESY, Hamburg, Germany

The FCC-hh is a proposed circular hadron collider at an energy of 100 TeV. The total integrated luminosity is expected to be around $30 ab^{-1}$. With such a large dataset, 400 times more double-Higgs events are expected than with the full HL-LHC dataset, allowing to measure the Higgs self-coupling with high precision. As a consequence, also rarer final states, which are not within reach of the (HL)-LHC, have good prospects at the FCC-hh. One such final state is the $bbZZ(\ell\nu\nu)$ channel, which is studied in this work. A multivariate analysis of $b\ell\ell\nu\nu$ events is implemented and upper limits on the di-Higgs production cross-section are derived in order to assess the potential of this channel. Moreover, it is investigated in how far specific kinematic regions, such as at high Higgs transverse momentum, can be exploited. In these studies, particular attention needs to be paid to the reconstruction of the missing transverse momentum, which will be extremely challenging at the FCC-hh due to the very high pile-up environment.

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Topic: 2.16 Higgs-Boson: erweitertere Modelle;
2.16 Higgs Boson: Extended Models
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