

Di-Higgs with missing transverse momentum at FCC-hh

Wednesday, November 9, 2022 2:55 PM (15 minutes)

The determination of the Higgs self-coupling from di-Higgs events with very high precision is one of the clearest benchmarks for the FCC-hh. Its potential has been well established already in several final states. In this talk studies into final states of the di-Higgs system which involve neutrinos are presented. The benefit of studying yet another di-Higgs final state is two-fold: First, any additional events included will add further precision to the measurement. Second, specifically neutrino channels will help to shed light on an experimental aspect for the FCC-hh which has not been well investigated yet: a robust reconstruction of the missing transverse momentum (ETMiss) is crucial for such analyses. It is clear that ETMiss reconstruction at the FCC-hh will be extremely challenging due to the high pile-up environment, with average interactions per bunch crossing of the order of 1000. In particular, $bbWW$, $bb\tau\tau$ and $bbZZ$ signals are analysed in the final state with 2 light charged leptons in addition to ETMiss, using cut-based as well as multi-variate techniques. Their expected sensitivity is extracted, and the impact of different scenarios for systematic uncertainties, such as the worsening of the ETMiss resolution, is assessed.

Type of talk

Future prospects

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