Contribution ID: **458** Type: **Poster**

Measurement prospects for di-Higgs production in the HH to bbyy channel with the ATLAS experiment at the HL-LHC

Friday, 8 July 2022 20:10 (20 minutes)

We present a prospect study on di-Higgs production in the HH to bbyy decay channel with the ATLAS experiment at the High Luminosity LHC (HL-LHC). The results are obtained by extrapolating the results from the Run 2 measurement, with 139/fb of data at a center-of-mass energy of 13 TeV, to the conditions expected at the HL-LHC. While there is no sign of di-Higgs production with the current LHC dataset, the much higher luminosity (3000/fb) and energy (14 TeV) at the HL-LHC will enable a much better measurement of this important process. We describe in detail the extrapolation process and assumptions, and multiple scenarios for the treatment of systematic uncertainties at the HL-LHC are considered. Under the baseline systematic uncertainty scenario, the extrapolated precision on the Standard Model di-Higgs signal strength measurement is 50%, corresponding to a significance of 2.2 sigma. The extrapolated 1 sigma confidence interval from a measurement of kLambda, the trilinear Higgs boson self-coupling modifier, is [0.3, 1.9].

In-person participation

No

Primary author: WANG, Alex (University of Wisconsin-Madison)

Presenter: WANG, Alex (University of Wisconsin-Madison)

Session Classification: Poster Session

Track Classification: Higgs Physics