

## Initial Results on Higgs Pair Production in Multi-Lepton Channels with the ATLAS Experiment

This talk presents the first comprehensive search for non-resonant Higgs boson pair (HH) production in multiple-lepton decay channels, including VVVV, VV $\tau\tau$ ,  $\tau\tau\tau\tau$ ,  $\gamma\gamma VV$ , and  $\gamma\tau\tau$ , where V is W or Z boson. The analysis also explores decays of HH to bbZZ with the Z bosons decaying into leptons. Data is derived from proton-proton collisions at 13 TeV, captured by the ATLAS detector during LHC's Run 2, with an integrated luminosity of 140 fb<sup>-1</sup>. While no evidence of HH production is observed, an upper limit is set on the signal strength, and 2sigma constraints are determined for the HHH coupling modifier,  $\kappa_\lambda$ .

**Primary authors:** 莫, 岑 (Shanghai Jiao Tong University); 张, 宇雷

**Presenter:** 莫, 岑 (Shanghai Jiao Tong University)

**Session Classification:** 分会场一

**Track Classification:** TeV 物理和超出标准模型新物理