Contribution ID: **125** Type: **Poster Presentation**

The \textbf{{\textbf{ $H \to hh, Sh, SS \to 4W \to 4\ell + 4\nu$} analysis with the ATLAS detector: optimization and prospects for the full Run-2 data}}

Tuesday, 26 June 2018 15:00 (2 hours)

The $H \to hh, Sh, SS \to 4W \to 4\ell + 4\nu$ analysis using \ensuremath{36.1 fb^{-1}} of pp collision data at a center-of-mass energy of 13˜TeV recorded with the ATLAS detector at the Large Hadron Collider is presented. The analysis introduces the new Higgs-like scalar, S, as well as the Standerd Model Higgs boson, h, through the decay of the heavy scalar, H. The search is characterized by four lepton and missing transverse momentum carried out by the neutrinos in the final state. This is a very clean signature with low expected background. The analysis strategy relies on the invariant mass of the four leptons and also uses dilepton kinematics to reject ZZ background. The paper discusses the published results with \ensuremath{36.1 fb^{-1}} of the Run-2 data. The analysis optimization and also the prospects for the full Run-2 data are also presented.

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