



Contribution ID: 119

Type: Poster

**Combination of searches for resonant and non-resonant Higgs boson pair production in the  $b\bar{b}\gamma$ ,  $b\bar{b}\tau\tau$  and  $b\bar{b}b\bar{b}$  decay channels using  $pp$  collisions at  $\sqrt{s} = 13$  TeV with the ATLAS detectors = 13 TeV with the ATLAS detector**

*Monday, January 10, 2022 4:21 PM (1 minute)*

A combination of searches for Higgs boson pair production is performed using up to 139fb<sup>-1</sup> of proton-proton collision data at a center-of-mass energy  $\sqrt{s} = 13$  TeV recorded with the ATLAS detector at the LHC. The combination exploits three analyses searching for HH decays to  $b\bar{b}\gamma$ ,  $b\bar{b}\tau\tau$  and  $b\bar{b}b\bar{b}$ . Results are interpreted in the context of non-resonant and resonant Higgs boson pair production scenarios. In the non-resonant interpretation, upper limits are set on the Higgs boson pair production cross-section and on the self-coupling modifier  $\kappa_\lambda$ . In the resonant interpretation, upper limits are set on the resonant Higgs boson pair production cross-section as a function of the heavy resonance mass.

**Primary author:** ATLAS COLLABORATION

**Presenter:** CHENG, Alkaid (University of Wisconsin Madison (US))

**Session Classification:** Beyond the Standard Model

**Track Classification:** Beyond the Standard Model