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## Search for HH or $X \to SH$ production in final states with one or two light leptons and a pair of $\tau$ -leptons with the ATLAS detector

Thursday 18 July 2024 20:40 (20 minutes)

A search for HH or  $X \to SH$  production in final states with one or two light leptons and a pair of  $\tau$ -leptons is presented. The search uses a pp collision data sample with an integrated luminosity of 140 fb $^{-1}$ , recorded at a center-of-mass energy of  $\sqrt{s}=13$  TeV, with the ATLAS detector at the Large Hadron Collider. The search selects events with two hadronically decaying  $\tau$ -lepton candidates from  $H \to \tau^+ \tau^-$  decays and one or two light leptons ( $\ell=e,\mu$ ) from  $S(H) \to VV$  (V=W,Z) decays while the remaining V boson decays hadronically or neutrinos. A multivariate discriminant based on event kinematics is used to separate the signal from the background. No excess is observed beyond the expected SM background and 95\% confidence level upper limits will be reported.

## I read the instructions above

Yes

## Alternate track

1. Beyond the Standard Model

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