

Searches for decays of the Higgs-like boson to tau lepton pairs with the ATLAS detector

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Measurements involving the newly discovered boson with a mass of approximately 125 GeV have all been consistent with the Standard Model Higgs boson hypothesis. If this particle is indeed the Standard Model Higgs boson, then it should interact with fermions via Yukawa couplings. The investigation of whether this boson couples to fermions (and in particular leptons) is a fundamental test of this central prediction. This presentation discusses direct searches for leptonic couplings of the new boson by searching for its decays in the ditau channel. The analysis, exploiting each of the $\tau^+\tau^+$, $\tau^+\tau^0$, and $\tau^0\tau^0$ final states, is based on data samples of proton-proton collisions collected by the ATLAS experiment at the LHC with centre-of-mass energies of 7 TeV and 8 TeV. The event selection, analysis techniques and systematic uncertainties for these searches are described, and the results are compared with Standard Model predictions.

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