

Abstract Submitted
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**Searching for High Mass Resonances Decaying to Lepton Pairs
using Proton-Proton Collisions at $\sqrt{s} = 13$ TeV with the ATLAS Detector
at the LHC**

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THE ATLAS COLLABORATION — The Standard Model of particle physics is a very successful theory, but it is incomplete as it does not explain neutrino masses or dark matter. Essentially, the Standard Model cannot be extrapolated to the high energy regime of the Planck scale, i.e., the scale at which quantum effects of gravity become strong, in a straightforward manner. To solve these shortcomings, many different extensions to the Standard Model have been posited. Extensions include compositeness models, extra dimensional models, and grand unified theories, which all aim to reconcile the very different scales of electroweak symmetry breaking and the gravitational Planck scale. These theories all predict the existence of new high mass resonances.

This analysis is conducted for both resonant and non-resonant new phenomena in dilepton final states. The LHC 2015 proton-proton collision dataset recorded by the ATLAS detector is used, corresponding to 3.2 fb^{-1} at $\sqrt{s} = 13$ TeV. The dilepton invariant mass spectrum is the discriminating variable used in this search. No significant deviations from the Standard Model expectation are observed. Lower limits are set on the signal parameters of interest at 95% credibility level, using a Bayesian interpretation.

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