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Search for heavy ZZ resonances in the $\ell\ell\ell\ell$ and $\ell\ell\nu\nu$ final states with the ATLAS detector

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The search for heavy resonances decaying into a pair of Z bosons leading to final states with four-charged leptons ($\ell\ell\ell\ell$) or two-charged leptons plus two neutrinos ($\ell\ell\nu\nu$) will be reported. Data used in the analysis were collected by the ATLAS experiment during Run II and correspond to a total integrated luminosity of 139 fb^{-1}. Different mass ranges for the hypothetical resonances are considered, depending on the final state and model. The different ranges span between 300 and 3000 GeV. The results are interpreted as upper limits on the production cross section of a spin-0 or spin-2 resonance. The upper limits for the spin-0 resonance are translated to exclusion contours in the context of Type-I and Type-II two-Higgs-doublet models, while those for the spin-2 resonance are used to constrain the Randall–Sundrum model with an extra dimension giving rise to spin-2 graviton excitations.

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