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Search for Decays of the Higgs Boson into a Z Boson and a Light Hadronically Decaying Resonance

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A search is presented for decays of the Higgs boson to a Z boson and a hadronically decaying light resonance, $h \rightarrow ZX \rightarrow \ell\ell + \text{hadrons}$, using the Run 2 dataset of the ATLAS detector at the LHC. Due to its low mass and high boost, the resonance is reconstructed as a single jet of hadrons. A boosted decision tree is used to suppress the large multijet background. Beyond its potential for new physics, this final state is a potential probe of the charm quark Yukawa coupling and the low Q^2 behaviour of $H \rightarrow ZZ^*$ decays.

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