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Studying $WV\gamma$ production in proton-proton collisions at $\sqrt{s} = 8$ TeV with the ATLAS experiment

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Quartic gauge couplings are tested by this study of the production of $WV\gamma$ events (where $V = W$ or Z) in 20.2 fb^{-1} of proton-proton collisions at a centre-of-mass energy of $\sqrt{s} = 8$ TeV recorded with the ATLAS detector. The fully-leptonic final state of $WV\gamma$ events containing an electron, a muon and a photon is analysed as well as semi-leptonic final states of $WV\gamma$ production containing an electron or a muon, two jets and a photon. For all final states two different fiducial regions are defined: one yielding the best sensitivity to the production cross section of the process and one optimised for the detection of new physical phenomena. In the former region, the $WV\gamma$ production cross section is computed using the fully-leptonic final state. In addition, upper limits on the production cross section are derived in both regions for all final states individually and for the combination of the semi-leptonic final states. The results obtained in the new physics phase space are combined for the interpretation in the context of anomalous quartic gauge couplings using an effective field theory.

Summary

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