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Searching for new physics using hadronic decays of W and Z bosons in the ATLAS detector

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Fully hadronic decays of pairs of vector bosons (WW, ZZ, WZ) into large-R jets may be very sensitive to currently undiscovered phenomena. As weak bosons are able to interact with spin-0, spin-1 and spin-2 particles, they act as a good tool for probing new physics beyond the Standard Model. Due to the large branching fraction of bosons to hadrons, studying the hadronic channels is advantageous, as it can yield a higher energy reach with respect to the semi and fully leptonic channels. In order to distinguish signal events from the large background of Standard Model dijet events, a novel machine-learning-based and mass-decorrelated large-R jet tagger, with optimized working points, is used. This analysis presents the latest ATLAS results for the search for heavy resonances decaying into vector bosons in the fully hadronic channel using the LHC full Run-2 data.

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