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Search for vector boson scattering with the semi-leptonic VW signature at CMS

A search for the electroweak VBS production of a VW pair plus two jets, in the semi-leptonic channel, at a centre-of-mass energy of 13 TeV is reported. The data sample corresponds to the full Run-II CMS dataset of proton-proton collisions at 13 TeV including an integrated luminosity of 137.1 fb⁻¹. Events are analyzed in two energy regimes: either the hadronically decaying W/Z boson is reconstructed as one large-radius jet, or it is identified as a pair of jets with dijet mass near to W/Z mass. Machine learning models are optimized for the signal extraction and the classifiers are interpreted using tools from the explainable machine learning field. The overwhelming background contribution from the single W production plus jets is measured in dedicated control regions implementing a data-driven strategy.

Collaboration / Activity

CMS

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