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First observation of tWZ production

We present the first observation of single top quark production in association with a W and a Z boson in proton-proton collisions using 13 and 13.6 TeV data recorded with the CMS detector corresponding to integrated luminosities of 138 and 61.9 fb⁻¹, respectively. Events are selected if they contain three or four charged leptons, which can be electrons or muons. State-of-the-art machine learning algorithms and sophisticated reconstruction methods result in an unprecedented sensitivity to tWZ production. We report the first observation of this rare process with a significance of more than five standard deviations.

Secondary track

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