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Measurement of the single top quark and antiquark production cross sections in the t channel and their ratio in proton-proton collisions at s=13TeV (Article)

(Open Access)

Sirunyan, A.M.[a], Tumasyan, A.[a], Adam, W.[b], Ambrogi, F.[b], Asilar, E.[b], Bergauer, T.[b], Brandstetter, J.[b], Dragicevic, M.[b], Erö, J.[b], Escalante Del Valle, A.[b], Flechl, M.[b], Frühwirth, R.[b], Ghete, V.M.[b], Hrubec, J.[b], Jeitler, M.[b], Krammer, N.[b], Krätschmer, I.[b], Liko, D.[b], Madlener, T.[b], Mikulec, I.[b], Rad, N.[b], Rohringer, H.[b],

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Abstract

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Measurements of the cross sections for the production of single top quarks and antiquarks in the t channel, and their ratio, are presented for proton-proton collisions at a center-of-mass energy of 13 TeV. The data set used was recorded in 2016 by the CMS detector at the LHC and corresponds to an integrated luminosity of 35.9 fb^{-1}. Events with one muon or electron are selected, and different categories of jet and b jet multiplicity and multivariate discriminators are applied to separate the signal from the background. The cross sections for the t-channel production of single top quarks and antiquarks are measured to be 130±1(stat)±19(syst)pb and 77±1(stat)±12(syst)pb, respectively, and their ratio is 1.68±0.02(stat)±0.05(syst). The results are in agreement with the predictions from the standard model. © 2019 The Author(s)

SciVal Topic Prominence

Topic: Top Quark | Partons | Higgs Bosons

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Author keywords

CMS | Cross section | Physics | Single top | Top quark

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