

Constrain new physics scenarios with enhanced light quark Yukawa couplings in off-shell Higgs production

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We consider the recent measurement of off-shell Higgs production by the CMS collaboration interpreted in terms of a width measurement of the Higgs boson and confront it with new physics in which the light quark Yukawa couplings are strongly enhanced. Even at the HL-LHC light quark Yukawa couplings of the first generation can only be constrained by factors of order a few hundred with respect to their Standard Model value. In what regards off-shell Higgs production, while enhanced light quark Yukawa couplings modify the Higgs width, a straightforward interpretation of the CMS measurement in terms of the width cannot be done as new production channels open up. Instead the dependence of the off-shell measurement on kinematic variables such as the invariant mass of the Z boson pair can be exploited to constrain new physics scenarios with enhanced light quark Yukawa couplings.

Type of talk

Theory

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