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Search for $t\bar{t}H$ production in the $H \rightarrow b\bar{b}$ decay channel at CMS

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A search for associated production of a standard model Higgs boson with a top quark-antiquark pair ($t\bar{t}H$), in which the Higgs boson decays into a $b\bar{b}$ pair, will be presented. Latest results are shown obtained using pp collision data recorded by the CMS experiment. Candidate $t\bar{t}H$ events are selected based on the number of leptons in the final state from the $t\bar{t}$ decay, and are further categorized according to the number of jets. Multivariate techniques are employed for the final event classification with an aim to discriminate between signal and background processes. Particularly challenging backgrounds arise from the $t\bar{t} + \text{heavy-flavour jet}$ production. A combined fit of multivariate discriminant distributions in all categories and $t\bar{t}$ decay channels is finally used to extract the $t\bar{t}H$ signal.

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