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Phenomenology of $t\bar{t}b\bar{b}$ at the LHC

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The Higgs boson production channel $t\bar{t}H(H \rightarrow b\bar{b})$ is a crucial ingredient to study the top-Yukawa coupling but suffers of a huge background. The direct $t\bar{t}b\bar{b}$ production represents one of the main backgrounds to this process and, therefore, needs to be described properly. In this talk I will present the latest theoretical results obtained in the dileptonic decay channel. These predictions are NLO accurate in QCD and include all the full off-shell effects. I will also discuss several effects that affect this process and provide a prescription to distinguish the nature of the various b -jets present in the final state.

Author: LUPATTELLI, Michele (RWTH Aachen University)

Presenter: LUPATTELLI, Michele (RWTH Aachen University)

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