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Coupling of $t\bar{t}$ with a strongly interacting EWSBS

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We report on the coupling of an external $t\bar{t}$ state to a strongly interacting EWSBS. We exploit perturbation theory in the small $M_t/\sqrt{s}$ quantity, whereas the EWSBS is taken as strongly interacting. We use a modified version of the IAM unitarization procedure to model such a strongly interacting regime. The scattering matrix elements $V_LV_L \to V_LV_L$, $V_LV_L \to hh$, $hh \to hh$, $V_LV_L \to t\bar{t}$ and $hh \to t\bar{t}$ are computed at NLO level within the framework of a non-linear Effective Field Theory and the Equivalence Theorem.

We are interested in $t\bar{t}$ both as initial and final state. Considering it as final state would allow us to study the possible appearance of resonances in the tt production channel at the LHC. And the initial $t\bar{t}$ state is a first step to look for resonances starting from two gluon states, via the triangle diagram with quark tops inside. Both cases have direct applications to the LHC phenomenology.

Summary

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