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A handle on anomalous top-Higgs couplings in top quark pair production through EW loops

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In this talk, top quark pair production is proposed as a probe of the CP structure of the top quark Yukawa interaction. Since the top-Higgs coupling enters through Higgs boson loops, a next-to-leading-order calculation is performed in the Standard Model Effective Field Theory in order to include arbitrary CP mixtures. This approach of analyzing Higgs boson degrees of freedom in loops benefits from the large top quark pair production rate and the excellent perturbative control over the theoretical prediction. The resulting sensitivity is contrasted with direct probes with on-shell Higgs boson production in association with a single top quark or top quark pair. Thereby, loop sensitivity is established as a complementary handle to on-shell sensitivity over a wide range of parameter space.

Summary

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