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Higgs Pair Production in a Composite 2HDM

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The Composite 2-Higgs-Doublet Model (C2HDM) is a composite Higgs Model where two Higgs doublets arise as pseudo Nambu-Goldstone bosons in order to retrieve the well known 2HDM but with couplings already predetermined by the composite nature of the model. Fermion masses are generated through partial compositeness entailing new heavy fermions. In this talk we present Higgs Pair production in this model via gluon fusion, including higher order QCD corrections. We investigate the impact of the higher-order corrections as well as the impact of the compositeness nature of the model with the new heavy fermions on the phenomenology of Higgs pair production.

The theoretical calculation is described in detail and specific benchmark scenarios are explored.

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