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Machine learning approaches to the Higgs boson self coupling

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Machine learning is now widely used in many fields of high energy physics. In particular, many important results have been improved in relation to the Higgs physics phenomena. Based on previous studies for Higgs-pair production in $HH \rightarrow b\bar{b}\gamma\gamma$ channel at the HL-LHC, we apply the machine learning approaches to the study of self-coupling of Higgs particle. We show that the various machine learning methods including the Deep Neural Network (DNN) can give the better performance in disentangling signal and backgrounds.

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