

Application of machine learning for the analysis of Higgs boson production in association with single top-quark

Tuesday, 25 October 2022 15:15 (15 minutes)

This paper describes the implementation of a neural network for the problem of classifying the Higgs boson production signal in association with a single top quark ($pp \rightarrow Ht$) and the main background processes ($t\bar{t}$, $t\bar{t}H$, $t\bar{t}W$, $t\bar{t}Z$). The tH channel is sensitive to the sign of the coupling, unlike $t\bar{t}H$. Also, an accurate Higgs-top cross-section will allow setting the limits of the coupling constant within the SM and BSM.

The application of the obtained deep machine learning algorithm makes it possible to increase the significance of the signal by 1.6 times.

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Session Classification: High Energy Physics

Track Classification: High Energy Physics