

Attention-based reconstruction for $t\bar{t}H(bb)$ in CMS

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A precise determination of the interactions of the Higgs boson with other SM particles is a crucial part of the LHC physics program. When determining the top Yukawa coupling in $t\bar{t}H(bb)$ events, deep learning plays an integral role. In the single-lepton channel, multivariate approaches using deep neural networks (DNNs) achieve state-of-the-art performance in signal/background classification.

A particular challenge of this analysis is the discrimination of $t\bar{t}H(bb)$ events from the irreducible $t\bar{t} + b\bar{b}$ background. Considering the combinatorial assignment of jets offers a possible means to deal with this problem and thus further improve performance. To achieve this, an attention-based DNN classifier (COBRA) was developed, whose results are presented in this talk.

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