Société Française de Physique

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Measuring quantum interference in the off-shell Higgs with Machine Learning

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The traditional methods of training a classifier to separate signal and background events for measurement break down in the context of quantum interference between signal and background processes. How can we train a Machine Learning model without the concept of labels?

New statistical approaches were developed and machine learning approaches are being investigated to solve this problem, which, if successful, would enhance the sensitivity to the signal strength of the QFT processes due to an off-shell Higgs boson. Advantages might include an optimal method for various values of the signal strength, even far away from the standard model value, as well as the possibility to have a machine learning method be aware of certain systematic uncertainties.

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