

Optimization in the search for rare Higgs processes during the HL-LHC using AI algorithms.

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Content

During the HL-LHC enormous amount of data will be produced, allowing for the study of rare processes including the production of two Higgs bosons (HH), Higgs produced in association with other particles (Httbar, HZ) and many others. The low cross-section of such processes combined with the high background levels represents a challenge for the observation of those states. Recently, new algorithms have been implemented to optimize the signal vs noise ratio using complex algorithms based on neural networks, such models are trained with simulation and tested with collision data. In this talk, we will review the status of such implementations, the various neural network architectures used to optimize the searches in terms of particle identification and trigger aiming to increase the sensitivity for those rare processes at the LHC.

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