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Uncertainty-aware machine learning for the LHC

Estimating uncertainties is a fundamental aspect in every physics problem, no measurements or calculations comes without uncertainties. Hence it is crucial to consider the effect of training a neural network to problems in physics. I will present our work on amplitude regression, using loop amplitudes from LHC processes, as an example to examine the impact of different uncertainties on the outcome of the network. We test the behavior of different neural networks with uncertainty estimation, including Bayesian neural networks and repulsive ensembles.

Presenter: ELMER, Nina

Session Classification: Social