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Theory predictions for the LHC require precise numerical phase-space integration and generation of un-weighted events. We combine machine-learned multi-channel weights with a normalizing flow for importance sampling to improve classical methods for numerical integration. By integrating buffered training for potentially expensive integrands, VEGAS initialization, symmetry-aware channels, and stratified training, we elevate the performance in both efficiency and accuracy. We empirically validate these enhancements through rigorous tests on diverse LHC processes, including VBS and W+jets.

Authors: Prof. MALTONI, Fabio (Universite Catholique de Louvain (UCL) (BE) and Università di Bologna); MATTELAER, Olivier (UCLouvain); WINTERHALDER, Ramon (UC Louvain); HEIMEL, Theo (Heidelberg University); PLEHN, Tilman

Presenter: HEIMEL, Theo (Heidelberg University)

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