Contribution ID: **191** Type: **Oral**

The MadNIS Reloaded

Tuesday 12 March 2024 11:30 (20 minutes)

Theory predictions for the LHC require precise numerical phase-space integration and generation of unweighted 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.

Significance

References

Experiment context, if any

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

Presenter: HEIMEL, Theo (Heidelberg University)

Session Classification: Track 3: Computations in Theoretical Physics: Techniques and Methods

Track Classification: Track 3: Computations in Theoretical Physics: Techniques and Methods