Abstract Submitted
for the APR21 Meeting of
The American Physical Society

**Profiling MadGraph** SMITA DARMORA, WALTER HOPKINS, Argonne National Laboratory — The High Luminosity Large Hadron Collider (HL-LHC) upgrade will require use of new computing resources such as HPCs in their production workflows. Preparing MadGraph, an event generator, for use of these resources yields an opportunity to improve the computational efficiency of MadGraph. We have studied computational hotspots to gain insight as to where MadGraph is using its computational resources. The Intel VTune Profiling tool is used to assess the "hot-spots" in MadGraph for Leading Order (LO) and Nest-to-Leading Order (NLO) processes. The identification of the time-consuming parts of the MadGraph workflow provides valuable insight for the parallelisation of parts of MadGraph. Event generation was expected to take the most amount of time in MadGraph, as it generates millions of events. The most CPU-intensive parts of event generation with MadGraph were found to be the matrix-element evaluation and LHAPDF.

Sergei Chekanov
Argonne National Laboratory

Date submitted: 11 Jan 2021        Electronic form version 1.4