



Contribution ID: 494

Type: **Poster**

D8: Evaluation of OpenMP for Portable CPU and GPU Programming with GridMini

Wednesday 28 July 2021 15:40 (20 minutes)

OpenMP has been the programming model of choice for shared-memory parallelism on multi-/many-core CPUs for a long time. Recent additions to the OpenMP standard have also enabled the support for offloading certain computations to compute accelerators such as GPUs. This potentially allows us to have a single code written with OpenMP directives that can be executed on both CPU and CPU+GPU platforms. We evaluate the OpenMP offloading features in the context of GridMini, a set of mini-benchmarks based on the Grid C++ lattice QCD library. We will discuss our experience with porting GridMini to NVIDIA, AMD and Intel GPUs using OpenMP. Preliminary benchmark performances will also be presented.

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Session Classification: Poster

Track Classification: Software development and Machines