

Seminar

Matthias Wagner

NVIDIA

The road to QUDA 1.0

Eleven years after its inception, the QUDA library for Lattice QCD on NVIDIA GPUs is nearing a historic 1.0 release. In this span, QUDA has evolved into an open-source framework for full QCD simulations. The library has been fully re-written in a new highly optimized C++11 framework, superseding python-generated routines and ushering in a new age of rapid algorithm prototyping and development. It supports nearly all fermion discretizations, features cutting-edge algorithms such as adaptive multigrid, deflation, and block Krylov-space methods, and contains native support for mixed precision and symmetry-inspired data compression. In preparation for the exascale era, the ability to strong scale is crucial for Lattice QCD simulations. We will discuss the techniques that QUDA implements to achieve the best scaling with MPI and novel improvements using NVSHMEM for GPU-centric communication.

Tuesday, 21.05.2019, 14:15 Uhr

Place: D6-135