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Benchmarking portable staggered fermion kernel written in Kokkos and MPI

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In the rapidly changing hardware landscape of high performance computing (HPC), binding workforce to optimize simulation software for just a single architecture becomes a sustainability issue.

In this work I explored the feasibility of using performance portable parallel code for a staggered fermion kernel. Fusing the Kokkos C++ Performance Portability EcoSystem with MPI allows to scale on massive parallel machines while still being able to target a plentitude of different architectures with the same simple code.

Benchmarking on a range of currently deployed and recently introduced systems, including AMD EPYC 7742, AMD MI250, Fujitsu A64FX, Nvidia A100 and Nvidia H100 components, produced mostly encouraging results.

Topical area

Software Development and Machines

Primary author: SCHLEPPHORST, Simon (Forschungszentrum Jülich)

Co-author: KRIEG, Stefan (Forschungszentrum Jülich / Bonn University)

Presenter: SCHLEPPHORST, Simon (Forschungszentrum Jülich)

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