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Gauge field compression in $SU(N)$ theories and spatial correlations on the lattice

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A long standing problem associated with performing lattice gauge theory calculations on GPU hardware is latency for both global memory transfers and MPI data transfers. Mitigating these latencies with data compression techniques can vastly improve the performance of solvers and help to combat strong scaling. In this talk we discuss a new gauge field compression technique in which the $SU(N)$ fields are decomposed into their fundamental representation, and then further compressed using their spatial correlations and the zfp library. Other lattice data types which exhibit spatial correlations can also be compressed in a similar manner with varying efficiency.

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