

2020 SIAM/CAIMS HAPPENING VIRTUALLY: 2nd Joint Annual Meeting (times listed are EDT)

Part of [MS53 Recent Advances in Scientific Computing](#)

Performance-portable interfaces for applications in Scientific Computing

Abstract. We present an open-source extensible library that provides a versatile algebraic interface and optimized implementations suitable for high-order Finite Element operators: libCEED. By using matrix-free representations, libCEED overcomes known challenges in high-order methods that use global sparse matrices as operator representations and enables portable performance through specialized implementations, selectable at runtime, tuned for a variety of current and emerging computational architectures, including CPUs and GPUs. We investigate operator composition and design of coupled solvers for applications of interest to the Scientific Computing community, by providing examples of the usage of libCEED, either standalone or integrated with other packages.

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