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Monte Carlo Acceleration of Iterative Solvers for Eigenvalue Problems

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The next generation of computational science applications will require numerical solvers that are both reliable and capable of high performance on projected exascale platforms. In order to meet these goals, solvers must be resilient to soft and hard system failures, provide high concurrency on heterogeneous hardware configurations, and retain numerical accuracy and efficiency.

In this talk we discuss hybrid deterministic-stochastic iterative algorithms for the solution of large, sparse eigenvalue problems with the ultimate goal of developing resilient solvers suitable for use on massively parallel architectures.