

TOWARD PARALLEL SCALABLE LINEAR SOLVERS SUITED FOR LARGE SCALE HIERARCHICAL PARALLEL PLATFORMS

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In this talk we will discuss the current and future research activities on the design of parallel scalable linear systems for large scale problems that range from dense linear algebra, to parallel sparse direct solver and hybrid iterative-direct approaches that attempt to go beyond the best capabilities one can expect from sparse direct solvers. In particular we will describe the current activities on the implementations designed on top of runtime systems that should provide both code and performance portabilities across different parallel platforms. Finally, we will present some preliminary results to address the resilience issues on extreme scale computers; for that purpose we consider numerical alternatives that do not intensively rely on checkpoint restart mechanisms.