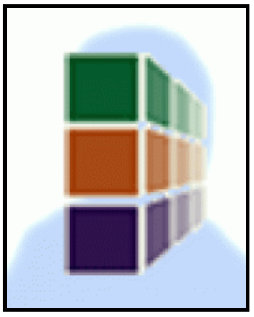

Other

Portable, Extensible Toolkit for Scientific Computation (PETSc)

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Johnston Hall 338
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Abstract:
Portable, Extensible Toolkit for Scientific Computation (PETSc) is a suite of data structures and routines for the scalable (parallel) solution of scientific applications modeled by partial differential equations. Over many years of research, the developers of PETSc have devised a powerful general-purpose infrastructure for the solution of sparse linear and non-linear systems arising from the discretization of PDEs. Due to its solid mathematical grounding, careful software design, and most importantly, evolution resulting from the usage of many users on various application areas, PETSc has had a major impact throughout the scientific and engineering computing community. As a PETSc developer, I will give an overview of the PETSc, and demonstrate its uses in algorithmic research, numerical production simulation and parallel performance evaluation. Using several examples, I will illustrate how to define and solve linear and nonlinear equations arising from the discretization of PDEs using PETSc. Towards the end, I will present a list of our ongoing research and developments.

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