Seminar

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Deflation-based preconditioners for stochastic models of flow in porous media

Abstract:

In numerical analysis the general aim is choosing the right method or combination of methods for the problem at hand, with the least cost and highest accuracy possible (while maintaining efficiency). In this talk, we consider the approximate solution of a class of 2-dimensional differential equations, with random coefficients. The aim, through using a combination of Krylov methods, preconditioners, and multigrid ideas is to implement an algorithm that offers low cost and fast convergence for approximating solutions to these problems. In particular, the use of a ”training” phase in the development of a preconditioner is proposed, where the first few linear systems in a sequence of similar problems are used to drive adaptation of the preconditioning strategy for subsequent problems.