

SOLVERS FOR LARGE LINEAR SYSTEMS ARISING IN THE STOCHASTIC FINITE ELEMENT METHOD

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Abstract

The discretization of stochastic elliptic boundary value problems by means of the stochastic finite element method [1] requires the solution of a large linear system of equations. Firstly, we discuss the structure of the stiffness matrix that strongly depends on the representation of the stochastic input data. Based on this examination we give an overview of recent solvers for SFEM discretizations.

For stochastic coefficients linear in a finite set of independent random variables we employ Krylov subspace recycling techniques [3] after decoupling the SFEM stiffness matrix [2] by simultaneous diagonalization of certain mass matrices related to the stochastic part of the discretization.

References

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