



Mathematics > Numerical Analysis

Analysis of a Fast Fourier Transform Based Method for Modeling of Heterogeneous Materials

J. Vondřejc, J. Zeman, I. Marek

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The focus of this paper is on the analysis of the Conjugate Gradient method applied to a non-symmetric system of linear equations, arising from a Fast Fourier Transform-based homogenization method due to (Moulinec and Suquet, 1994). Convergence of the method is proven by exploiting a certain projection operator reflecting physics of the underlying problem. These results are supported by a numerical example, demonstrating significant improvement of the Conjugate Gradient-based scheme over the original Moulinec-Suquet algorithm.

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