On Homogenization of Non-Divergence Form Partial Difference Equations

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Abstract
In this paper a method for proving homogenization of divergence form elliptic equations is extended to the non-divergence case. A new proof of homogenization is given when the coefficients in the equation are assumed to be stationary and ergodic. A rate of convergence theorem in homogenization is also obtained, under the assumption that the coefficients are i.i.d. and the elliptic equation can be solved by a convergent perturbation series.

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Published on: June 9, 2005

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