Optimal homogenization rates in stochastic homogenization of monotone, uniformly elliptic equations

Stefan Neukamm

Institute of Scientific Computing
TU Dresden
Germany

e-mail: stefan.neukamm@tu-dresden.de

We derive homogenization rates for elliptic PDEs with monotone nonlinearity in the uniformly elliptic case. Under the assumption of a fast decay of correlations on scales larger than the microscale ε, we establish estimates of optimal order for the L^2-homogenization error. Previous results in nonlinear stochastic homogenization have been limited to a small algebraic rate of convergence. We also establish error estimates for the approximation of the homogenized operator by the method of representative volumes of the order $(L/\varepsilon)^{-\frac{d}{2}}$ for a representative volume of size L. The talk is based on a joint work with Julian Fischer.