Benchérif-Madani, Abdellatif; Pardoux, Étienne
Homogenization of a semilinear parabolic PDE with locally periodic coefficients: a probabilistic approach. (English) Zbl 1184.35028

Summary: A singular semilinear parabolic PDE with locally periodic coefficients is homogenized. We substantially weaken previous assumptions on the coefficients. In particular, we prove new ergodic theorems. We show that in such a weak setting on the coefficients, the proper statement of the homogenization property concerns viscosity solutions, though we need a bounded Lipschitz terminal condition.

MSC:
35B27 Homogenization in context of PDEs; PDEs in media with periodic structure
60H30 Applications of stochastic analysis (to PDEs, etc.)
60J60 Diffusion processes
60J35 Transition functions, generators and resolvents
35D40 Viscosity solutions to PDEs
35K58 Semilinear parabolic equations

Keywords:
diffusion approximation; backward SDE; new ergodic theorems

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References:

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