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Homogenization of a stochastic nonlinear reaction-diffusion equation with a large reaction term: the almost periodic framework

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Homogenization of a stochastic nonlinear reaction-diffusion equation with a large non-linear term is considered. Under a general Besicovitch almost periodicity assumption on the coefficients of the equation we prove that the sequence of solutions of the said problem converges in probability towards the solution of a rather different type of equation, namely, the stochastic non-linear convection-diffusion equation which we explicitly derive in terms of appropriated functionals. We study some particular cases such as the periodic framework, and many others. This is achieved under a suitable generalized concept of sigma-convergence for stochastic processes.

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