

Homogenization of Nonlinear Equations in nondivergence type with Neumann data in Perforated Domains

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Abstract:

In this talk we are going to discuss the homogenization of Nonlinear Equations with Neumann data in Perforated Domains, which is a generalization of the homogenization of soft inclusions. Some application comes from the stochastic control or game theory with soft inclusion. Main difficulties come from the scale difference between Diffusion equation and Neumann data since diffusion equation is invariant under quadratic scaling while the Neumann data is invariant under the linear scaling. Another difficulty is the concept of compatibility condition for Nonlinear equations of nondivergence type with nonlinear Neumann data, since the natural compatible Neumann data comes from the integration by part for the operators of divergence type.

In this talk, we will show these two questions are actually related and can be solved by the existence of first corrector which will correct the limit profile in ϵ -order and gives a concept of compatibility condition. And the second corrector will give us the homogenized (or effective) equation for the limit profile.