



Karlstad Applied Analysis Seminar (2021)

Abu Sufian, Indian Institute of Science, India.

September 08, Wednesday, 10:30AM.

Strong contrasting diffusivity in general oscillating domains: Homogenization of optimal control problems

Abstract

This talk will discuss problems in high oscillating domains, where the oscillatory part is made of two materials with high contrasting conductivities (or diffusivity). In the first part, we will see the homogenization of an elliptic equation on the considered domain. The main discussion in this talk is the study of optimal control problems based on the unfolding method. The interesting result is the difference in the limit behavior of the optimal control problem, which depends on the control's action, whether it is on the conductive part or insulating part. In both cases, we derive the two-scale limit controls problems which are pretty similar as far as analysis is concerned. But, if the controls are acting on the conductive region, a complete-scale separation is available, whereas a complete separation is not visible in the insulating case due to the intrinsic nature of the problem.