

SPEAKER:

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TITLE:

Nodal and Critical Sets of Elliptic Equations in Homogenization

ABSTRACT:

In this talk I will describe my recent work, joint with Fanghua Lin, on the geometric properties of solutions of partial differential equations in the homogenization theory. We consider second-order elliptic equations with rapidly oscillating and periodic coefficients. We show that the $(d-1)$ -dimensional Hausdorff measures of the nodal sets and the $(d-2)$ -dimensional Hausdorff measures of the critical sets are bounded uniformly with respect to the period, provided that the doubling indices for the solutions are bounded. The proof uses the harmonic approximation successively. The key is to control accumulated errors by renormalization and rescaling.