

SEMINARIO

Mathematical Mechanics and Inverse Problems

EXPOSITOR

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Title

From the fluid flow through a partially perforated domain to Darcy's law: the homogenization of the natural Stokes problem

Abstract:

One considers the Stokes problem in the case of a partially perforated domain (the perforated part models a porous medium, the boundary of which is just assumed Lipschitz). A single fluid is considered and the external force in the porous medium is properly scaled. The purpose of the talk is to present a proof of the homogenization of this problem using the periodic unfolding method.

In the homogenized limit, the problem becomes an uncoupled pair of problems, one is the standard Stokes problem in the normal part of the domain, the other an elliptic equation for the limit of the normalized pressure. The limit of the renormalized velocity is linearly related to the gradient of the pressure in the porous medium (this is a generalized Darcy's law).

Jueves 21 de Enero a las 15:00 hrs, Sala de Seminarios DIM, 5to Piso, Beauchef 851, Torre Norte.

