



Departamento
de Matemática
Aplicada



Instituto de
Matemática
Interdisciplinar

SEMINARIO DE MATEMÁTICA APLICADA

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Effective Elastic and Thermoelastic Properties of Composites with Imperfect Interfaces

In this talk, we shall discuss some recent results concerning the macroscopic properties of elastic and thermoelastic composites with imperfect interfaces. We consider, at the microscale, an ε -periodic elastic or thermoelastic composite formed by two components with imperfect contact at the interface. Here, ε is a small positive parameter related to the characteristic size of our two materials. Depending on the geometry of the composite medium, on the thermal and the elastic properties of its two constituents and on the magnitude with respect to ε of the jump of the displacement and, respectively, of the temperature fields across the imperfect interface, various types of problems arise at the macroscale. The convergence of the homogenization process is proven in all these cases. The main tool for obtaining our macroscopic models is the use of the periodic unfolding method, which enables us to deal with a large class of heterogeneous media.

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