dmat universidade de aveiro departamento de matemática

CIDMA CENTRO DE I&D EM MATEMÁTICA E APLICAÇÕES CENTER FOR R&D IN MATHEMATICS AND APPLICATIONS

Colóquio CIDMA / DMat

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A functional analytic approach to singular perturbation problems

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This talk is dedicated to the analysis of boundary value problems on singularly perturbed domains by an approach which is alternative to those of asymptotic analysis and of homogenization theory, and has the character of a general presentation.

In particular, we will consider a certain linear or nonlinear boundary value problem on a domain with one or possibly infinitely many holes, whose size is determined by a positive parameter ϵ and we will consider a family of solutions depending on ϵ as ϵ approaches 0. Then we shall represent the dependence on ϵ of the family of solutions, or of corresponding functionals of the solutions such as the energy integral, in terms of possibly singular at 0 but known functions of ϵ such as ϵ^{-1} or $\log \epsilon$, and in terms of possibly unknown real analytic operators.