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Singular perturbation problems in perforated domains

Abstract
In this talk, we present some recent results on the analysis of singular perturbation problems in perforated domains. First, we will consider the asymptotic behavior of the solutions of a mixed problem for the Laplace equation in a domain with moderately close holes, *i.e.*, with distance tending to zero 'not faster' than the size. We describe what happens to the solutions in terms of real analytic maps and we compute asymptotic expansions, by an approach based on Potential Theory and Functional Analysis. Then we will show how our method can be exploited to analyze the influence of perforations close to the boundary and near the vertex of a planar sector.

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