

Waves in a thin and periodically oscillating media

We study the asymptotic behavior of the spectrum of an elliptic operator with periodically oscillating coefficients, in a thin domain, with vanishing Dirichlet conditions. Three cases are treated: the case where the periodicity of the oscillations and the thickness of the domain have the same order, the case where the oscillations have a frequency much greater than the thickness of the domain and, finally, the case where the thickness has a greater order than the oscillations. A physical motivation can be to understand the behavior of the probability density associated to the wave function of a particle confined to a very thin domain, with periodically varying characteristics.

This is joint work with Rita Ferreira.