UNIQUENESS IN THE INVERSE CONDUCTIVITY PROBLEM FOR THIN IMPERFECTIONS WEAKLY OR STRONGLY CONDUCTING

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Abstract: In a two-dimensional domain Ω, we consider the potential u harmonic in $\Omega \backslash \sigma$, σ a curve in Ω, which satisfies on σ the transmission condition $\lambda \, (u^+ - u^-) = \dfrac{\partial u}{\partial \nu}$ or the condition $-\mu \, (\dfrac{\partial u^+}{\partial \nu} - \dfrac{\partial u^-}{\partial \nu}) = \dfrac{\partial^2 u}{\partial \tau^2}$ and on $\partial \Omega$ the usual Neumann condition. By the additional knowledge of $u \left.\right|_{\partial \Omega}$, we state some results of uniqueness of σ, in case σ is a graph. The two conditions considered describe a situation in which the curve σ represents a thin imperfection, whose conductivity is, respectively, very weak or very strong.