# Global uniqueness for a 3-D/2-D inverse conductivity problem in tube domains via Carleman estimates

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**Abstract**

We consider the problem of determining the electric conductivity in tube domains from the boundary measurements of the voltage potential. The data are assumed to be incomplete. The Tikhonov's formulation of the one-dimensional non-overdetermined inverse conductivity problem is extended to the case of the two-dimensional conductivity distribution. In this formulation, the number of independent variables in the Cauchy data equals the number of independent variables in the unknown conductivity distribution and the position of an electrode injecting the electric current into a tube is assumed to be fixed. The method of Carleman estimates combined with both the direct Fourier and inverse Laplace transforms is employed to establish the Lipschitz stability for an auxiliary inverse hyperbolic problem. The global uniqueness theorem for the original inverse conductivity problem follows from the Lipschitz stability estimate.

**Available in the pdf format:**
at `http://www.math.uncc.edu/preprint/2004/index.php`
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