1053-49-188   **Zuhair M. Nashed**, 4000 Central Florida Blvd, Orlando, FL 32816, and **Alexandru C Tamasan***, 4000 Central Florida Blvd, Orlando, FL 32816. *Local stability in a minimization problem for conductivity imaging.*

We consider the problem of minimization of the functional $\int_\Omega a(x)|\nabla u(x)|dx$ over functions u of bounded variation with prescribed trace f at the boundary. The stability of the minimum value of the functional with respect to the coefficient $a \in L^2(\Omega)$ is established in the vicinity of a coefficient of the form $a = \sigma|\nabla u|$, where u solves $\nabla \cdot \sigma \nabla u = 0$ with $u|_{\partial\Omega} = f$. This problem occurs in conductivity imaging when knowledge of the magnitude of the current density field inside a body is available. The method of proof is constructive. (Received September 03, 2009)