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Weifu Fang and **Suxing Zeng*** (suxing.zeng@wright.edu), Department of Mathematics and Statistics, Wright State University, Dayton, OH 45435. *Recovery of an Interface from Boundary Measurement in an Elliptic Differential Equation.*

We study the inverse problem of recovering an interior interface from a boundary measurement in an elliptic boundary value problem arising from a semiconductor transistor model. We set up a nonlinear least-squares formulation for solving the inverse problem, and establish the necessary derivatives with respect to the interface. We then propose both the Gauss-Newton iterative method and the conjugate gradient method for the least-squares problem, and present implementation of these methods using integral equations. (Received September 17, 2010)