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College Drive, Rice Lake, WI 54868. *Optimization Methods for Inverse Problems.*

The present talk will focus on an inverse problem of identifying coefficients in elliptic boundary value problems. A common approach for solving this inverse problem is by formulating a minimization problem whose solution is an approximation of the required coefficient. We will present an overview of the most commonly used objective functionals for solving such inverse problems. Main emphasis of the talk will be on a new objective functional that possess interesting mathematical features. New stability results for a general elliptic inverse problem will be discussed. Numerical examples will be used to explain the main ideas. (Received January 13, 2007)