Meeting: 999, Nashville, Tennessee, SS 9A, Special Session on Inverse Problems

999-35-63 **Sergei Avdonin**, **Suzanne Lenhart** and **Vladimir Protopopescu*** (`vvp@ornl.gov`), Mathematics and Computer Science Division, Oak Ridge National Laboratory, Oak Ridge, TN 37831. *Determining the Potential in the Schroedinger Equation by the Boundary Control Method.*

We consider the problem of identifying the unknown potential in the one-dimensional Schroedinger equation when we are given either the Neumann to Dirichlet or the Dirichlet to Neumann map corresponding to the problem. The knowledge of either of these maps together with spectral controllability results for the Schroedinger equation obtained using properties of exponential Riesz bases allow recovery of the spectral data. Once the spectral data is determined, we identify the unknown potential from an auxiliary wave equation with the same spectral data, via the Boundary Control method. (Received August 03, 2004)