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Jonathan G. Bell* (jbell@umbc.edu), Department of Mathematics & Statistics, UMBC,
Baltimore, MD 21250. *Determining a Distributed Parameter for a Neuronal Cable Model on a
Metric Tree Graph.*

The goal in this talk is to discuss the inverse problem of recovering a single spatially distributed conductance parameter in a cable theory model (one-dimensional diffusion equation) defined on a finite tree graph. We employ a boundary control method that gives a unique reconstruction and an algorithmic approach. The motivation for this work is that dendrites of nerve cells are tree-like graphs, which have non-uniformly distributed physical parameters, one being channel conductance. It is also one of the first studies of the application of boundary control methods to inverse problems of parabolic problems on graphs, and one of the first uses of the method in this application area. This is collaborative work with Sergei Avdonin, U. Tennessee at Chattanooga. (Received September 24, 2012)