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*Dynamical Inverse Problem on a Metric Tree.* Preliminary report.

We consider the problem of reconstruction of the potential for the wave equation on a star graph using the dynamical Dirichlet-to-Neumann map. Our algorithm is based on the Boundary Control method. We reduce the problem of reconstruction to a second kind Fredholm integral equation, the kernel and the right-hand-side of which arise from an auxiliary second kind Volterra integral equation. A second-order accurate numerical method for the equations is described and implemented. Then several numerical examples demonstrate that the algorithm works and can be used to reconstruct an unknown potential accurately. (Received September 18, 2012)