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

999-35-15 **Amin Boumenir*** (boumenir@westga.edu), 1600 Maple Street, Carrollton, GA 30118. *The representation of the Dirichlet to Neumann map.*

We are concerned with the matrix representation of the Dirichlet to Neumann map associated with the differential equation $-\Delta u + qu = 0$ in $L^2(\Omega)$. To this end we use the bases of eigenfunctions of the Laplacian operator under Dirichlet and Neumann boundary conditions to relate the Fourier coefficients of the solution u to its traces u and $\frac{\partial u}{\partial n}$ on the boundary $\partial\Omega$. This leads to an explicit matrix equation between the operator q, the eigenvalues of $-\Delta$ and the Dirichlet to Neumann map. (Received June 13, 2004)