

**Meeting:** 1003, Atlanta, Georgia, SS 4A, AMS-SIAM Special Session on Theoretical and Computational Aspects of Inverse Problems, I

1003-65-1181      **Vladimir Druskin** and **Shari Moskow\*** ([moskow@math.ufl.edu](mailto:moskow@math.ufl.edu)), 358 Little Hall, P.O. Box 118105, Gainesville, FL 32611-8105. *Targeted grid approximations for geophysical inversion.*

For many inverse problem applications, such as remote sensing, the solution of a partial differential equation is produced by local sources and is needed only at receiver locations, and not in the entire domain. In this talk, we introduce and discuss new developments with a rigorous approach to targeted grid refinement which is based on rational approximation of the Neumann-to-Dirichlet (ND) map in the spectral domain. The technique uses simple finite difference approximations with optimized placement of the grid points. The fact that the ND map is well approximated makes the technique ideal for inverse problems, domain decomposition and absorbing boundary conditions. (Received October 04, 2004)