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

1003-35-182 **Michael Anderson**, **Atsushi Katsuda**, **Yaroslav Kurylev**, **Matti Lassas** and **Michael Taylor*** (met@math.unc.edu), Prof. Michael Taylor, Math. Dept., Univ. of North Carolina, Chapel Hill, NC 27599. *Boundary regularity for the Ricci equation, geometric convergence, and Gelfand's inverse boundary problem.*

This talk ties together three themes. The first is to establish regularity of a metric tensor, on a manifold with boundary, on which there are given Ricci curvature bounds, on the manifold and its boundary, and a Lipschitz bound on the mean curvature of the boundary. The second is to establish geometric convergence of a subsequence of manifolds with boundary with such geometrical bounds and also an upper bound on the diameter and a lower bound on the injectivity and boundary injectivity radius, making use of the first part. The third theme involves the uniqueness and conditional stability of an inverse problem proposed by Gelfand, making essential use of the first two parts. (Received August 19, 2004)