DG/PDE/IP SEMINAR

FRIDAY, MAY 23, 2008
PADELFORD C-401
2:30–3:30PM

Carleman estimates and Calderon's inverse problem on manifolds

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We consider the imaging of anisotropic materials by electrical measurements. This inverse problem arises in Electrical Impedance Tomography (EIT), which has been proposed as a diagnostic method in medical imaging and nondestructive testing. The mathematical model is the anisotropic Calderon problem, which consists in determining a matrix of coefficients in an elliptic equation from boundary measurements of solutions.

In geometric terms, the problem is to determine a Riemannian metric from Cauchy data of harmonic functions on a manifold. Our approach is based on Carleman estimates. We characterize those Riemannian manifolds which admit a special limiting Carleman weight. By using these weights we construct complex geometrical optics solutions to elliptic equations, and prove uniqueness results in inverse problems for a class of Riemannian manifolds.

This is a joint work with D. Dos Santos Ferreira (Paris 13), C. Kenig (Chicago), and G. Uhlmann (Washington).

For more information about this seminar, visit the DG/PDE Seminar Web page (from the Math Department home page, `www.math.washington.edu`, follow the link **Seminars, Colloquia, and Conferences**).

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