

## DG/PDE/IP SEMINAR

WEDNESDAY, FEBRUARY 20, 2008

PADEL FORD C-36

3:50–5PM

Inverse problems for evolution equations with single boundary measurements

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We analyze the inverse problems of retrieving a stationary potential from a single Neumann boundary measurement, for the wave and the Schrödinger linear evolution equations.

Global Carleman estimates and the method of Bukhgeim-Klibanov are especially useful for solving one measurement inverse problems. It is possible to obtain local Lipschitz stability around a single known solution, provided that this solution is regular enough.

We briefly sketch this method, and we review the recent literature related with this problems. We notice about the differences between the results for the wave equations and those for the Schrödinger equation. Also we mention the connection with the controllability.

We present some results from recent joint works with L. Baudouin, A. Osses and L. Rosier:

1. **Discontinuous main coefficient.** We construct a Carleman weight adapted to this situation (for both wave and Schrödinger equation), under some particular hypothesis for the discontinuity.
2. In the Schrödinger equation, we derive Carleman estimates with *degenerate weights*, which allow us to prove the stability for the inverse problem with **less restrictive boundary observations** than previous results in the literature.

Finally, we state some open problems arising from these works.

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

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