

DG/PDE/IP SEMINAR
WEDNESDAY, OCTOBER 10, 2007
PADEL FORD C-36
3:45–5PM

Inverse Transport with isotropic sources and angularly
averaged measurements

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We consider the reconstruction of a spatially-dependent scattering coefficient in a linear transport equation from diffusion-type measurements. In this setup, the contribution to the measurement is an integral of the scattering kernel against a product of harmonic functions, plus an additional term that is small when absorption and scattering are small. The linearized problem is severely ill-posed. We construct a regularized inverse that allows for reconstruction of the low frequency content of the scattering kernel, up to quadratic error, from the nonlinear map. An iterative scheme is used to improve this error so that it is small when the high frequency content of the scattering kernel is small.

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