

Two inverse problems with internal data: Hölder and logarithmic stability estimates

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Abstract

I consider two inverse problems that are motivated by multi-wave imaging. I'm mainly interested in determining coefficients in elliptic BVP's from internal data. These data are in general obtained from a first inversion formula by solving an inverse problem for the wave equation. The first problem we present consists in determining the absorption coefficient appearing in a Helmholtz equation from an energy attenuated by this absorption coefficient. In the second inverse problem we want to recover both the diffusion and the absorption coefficients appearing in a divergence form elliptic BVP. This problem is related to quantitative photo-acoustic tomography. The overdetermined data in that case consists in a couple of internal measurements corresponding to two well chosen illuminations.

Depending on assumptions on known data, we establish Hölder or logarithmic stability estimates.

The first part of my talk is prepared from joint works with *Faouzi Triki*. The second part is based on a work, in preparation, in collaboration with *Eric Bonnetier* and *Faouzi Triki*.