Inverse source problems for some evolution PDEs

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Abstract

We consider some inverse source problems, related to the recovery of a source term $F$ appearing in the damped wave equation

$$\partial_t^2 u(t, x) + \rho(x)\partial_t^\alpha u(t, x) - c(x)\Delta u(t, x) = f(t, x), \; (t, x) \in (0, T) \times \Omega,$$

with $T \in (0, +\infty]$, $\Omega$ a domain of $\mathbb{R}^n$, $n \geq 2$, $\alpha : \Omega \rightarrow (0, 2)$ a function and $\partial_t^\alpha$ corresponding to the usual derivative when $\alpha = 1$ and to the fractional derivative in the Caputo sense of order $\alpha$ when $\alpha \neq 1$. This talk is based on some joint work with Guanghui Hu, Eric Soccorsi and Masahiro Yamamoto.