

Uniqueness of a parameter inverse problem for multi-term time-fractional diffusion equations by inexact data

Yikan Liu

Hokkaido University

email: ykliu@es.hokudai.ac.jp

Abstract

As the most significant difference from parabolic equations, the asymptotic behavior of solutions to time-fractional evolution equations is dominated by the fractional orders, whose unique determination has been frequently investigated in literature. Unlike all existing results, in this talk we explain the uniqueness of orders and parameters (up to a multiplier for the latter) only by the inexact data near $t = 0$ at a single point. Moreover, we discover special conditions on unknown initial values for the coincidence of observation data. As a byproduct, we can even conclude the uniqueness of initial values by the same data if the rank condition is satisfied. The proofs rely on the asymptotic expansion after taking the Laplace transform and Cauchy's integral formula.