

Preface

In this book, focusing on hyperbolic systems, we give self-contained descriptions of

- derivations of Carleman estimates;
 - methods for application of Carleman estimates to stability of inverse problems.
- Confining ourselves to equations of hyperbolic type, we survey previous and recent results concerning the applicability of Carleman estimates.

We do not intend to pursue any general treatment of the Carleman estimates themselves; rather by arguing in a direct manner, we mainly aim to demonstrate the applicability of Carleman estimates to inverse problems. In many places, we choose direct arguments based on basic calculus, rather than more general sophisticated methods. Because inverse problems are strongly connected with the respective partial differential equations under consideration and, for example, we have to specify unknown coefficients more concretely, and the direct method is more relevant for inverse problems. Moreover, we do not intend the current book to be encyclopedic in any sense, and the references are limited.

Some part is based on a one-semester course delivered at the Graduate School of Mathematical Sciences of The University of Tokyo by the first author when he was invited there as full professor in 2011–2012.

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