

1. Record Nr.	UNINA9910794628303321
Autore	Nakonechnyi O.
Titolo	Guaranteed estimation problems in the theory of linear ordinary differential equations with uncertain data // Oleksandr Nakonechnyi and Yuri Podlipenko
Pubbl/distr/stampa	Gistrup, Denmark ; ; London ; ; New York, New York : , : River Publishers : , : Routledge, , [2021] ©2021
ISBN	1-00-333836-4 1-003-33836-4 1-000-79513-6 87-7022-631-8
Edizione	[1st ed.]
Descrizione fisica	1 online resource (234 pages)
Collana	River Publishers series in mathematical and engineering sciences
Disciplina	515.353
Soggetti	Cauchy problem Differential equations, Linear Estimation theory
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Front Cover -- Guaranteed Estimation Problems in the Theory of Linear Ordinary Differential Equations with Uncertain Data -- Contents -- Preface -- Introduction -- 1 Guaranteed Estimates of Solutions and Right-Hand Sides of the Cauchy Problem Under Incomplete Data -- 1.1 Preliminaries and Auxiliary Results -- 1.2 Statement of the Estimation Problem -- 1.3 Minimax Estimation of Functionals From Solutions of the Cauchy Problem -- 1.4 1-Optimal Estimates of Unknown Solution of the Cauchy Problem -- 1.5 Representations of Guaranteed Estimates of Functionals -- 1.6 Minimax Estimation of the Right-Hand Sides of Equalities that Enter -- 1.7 Guaranteed Estimation of Solutions to the Cauchy Problem -- 1.8 Guaranteed Predictive Estimation of Solutions to the Cauchy Problem -- 2 Guaranteed Estimation of Unknown Solutions and Right-Hand Sides of First Order Linear Systems of Periodic ODEs -- 2.1 Guaranteed Estimation of Solutions of First Order Linear Systems -- 2.2 Guaranteed Recovery of Unknown Right-Hand Sides -- 2.3

Guaranteed a Posteriori Estimation of Unknown Right-Hand Sides -- 3
Guaranteed Estimation of Solutions of Boundary Value Problems for
Linear Ordinary Differential Equations with Decomposed Boundary Data
-- 3.1 Preliminaries and Auxiliary Results -- 3.2 Statement of the
Minimax Estimation Problem and Its Reduction -- 3.3 Representations
for Minimax Estimates of Functionals from Solutions -- 3.4 Minimax
Estimates of Solutions Subject to Incomplete Restrictions -- 3.5
Elimination Technique in Minimax Estimation Problems -- 3.6 Minimax
Estimation of the Solutions to the Boundary Value Problems -- 3.7
Results of Numerical Experiments -- 4 Guaranteed Estimation of
Parameters of Boundary Value Problems for Linear Ordinary Differential
Equations with General Boundary Data -- 4.1 Auxiliary Results.
4.2 Statement of the Estimation Problem of Solutions -- 4.3
Representations for Minimax Estimates of the Values of Functionals --
4.4 Minimax Estimation of Functionals from Right-Hand Sides -- 4.5
Minimax Estimation of Functionals from Solutions -- 4.6 Auxiliary
Results -- 4.7 Statement of Estimation Problem -- 4.8 Theorems on
the General form of Minimax Estimates -- 4.9 Estimation Problems of
Functionals from Unknown Data -- References -- Index -- About the
Authors -- Back Cover.

Sommario/riassunto

This monograph is devoted to the construction of optimal estimates of values of linear functionals on solutions to Cauchy and two-point boundary value problems for systems of linear first-order ordinary differential equations, from indirect observations which are linear transformations of the same solutions perturbed by additive random noises.
