1. Record Nr. UNINA9910790824503321

Autore	Vabishchevich P. N (Petr Nikolaevich)
Titolo	Additive operator-difference schemes : splitting schemes / / by Petr N. Vabishchevich
Pubbl/distr/stampa	Berlin ; ; Boston : , : Walter de Gruyter GmbH & Co. KG, , [2014] ©2014
ISBN	3-11-032146-7
Descrizione fisica	1 online resource (370 p.)
Classificazione	SK 920
Disciplina	515/.724
Soggetti	Initial value problems Boundary value problems Differential operators Mathematical models
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Front matter -- Preface -- Contents -- Notation -- 1. Introduction -- 2. Stability of operator-difference schemes -- 3. Operator splitting -- 4. Additive schemes of two-component splitting -- 5. Schemes of summarized approximation -- 6. Regularized additive schemes -- 7. Schemes based on approximations of a transition operator -- 8. Vector additive schemes -- 9. Iterative methods -- 10. Splitting of the operator at the time derivative -- 11 Equations with pairwise adjoint operators -- Bibliography -- Index
Sommario/riassunto	Applied mathematical modeling is concerned with solving unsteady problems. Splitting schemes are attributed to the transition from a complex problem to a chain of simpler problems. This book shows how to construct additive difference schemes (splitting schemes) to solve approximately unsteady multi-dimensional problems for PDEs. Two classes of schemes are highlighted: methods of splitting with respect to spatial variables (alternating direction methods) and schemes of splitting into physical processes. Also regionally additive schemes (domain decomposition methods) and unconditionally stable additive schemes of multi-component splitting are considered for evolutionary equations of first and second order as well as for systems of equations.

The book is written for specialists in computational mathematics and mathematical modeling. All topics are presented in a clear and accessible manner.