1. Record Nr. UNINA9910777458503321

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Titolo	Domain decomposition methods for the numerical solution of partial differential equations [[electronic resource] /] / Tarek P.A. Mathew
Pubbl/distr/stampa	Berlin, : Springer, c2008
ISBN	1-281-51280-X 9786611512804 3-540-77209-X
Edizione	[1st ed. 2008.]
Descrizione fisica	1 online resource (780 p.)
Collana	Lecture notes in computational science and engineering, , 1439-7358 ; ; 61
Disciplina	515.353
Soggetti	Decomposition method Differential equations, Partial - Numerical solutions
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 (p. [711]-760) and index.
Nota di contenuto	Decomposition Frameworks -- Schwarz Iterative Algorithms -- Schur Complement and Iterative Substructuring Algorithms -- Lagrange Multiplier Based Substructuring: FETI Method -- Computational Issues and Parallelization -- Least Squares-Control Theory: Iterative Algorithms -- Multilevel and Local Grid Refinement Methods -- Non-Self Adjoint Elliptic Equations: Iterative Methods -- Parabolic Equations -- Saddle Point Problems -- Non-Matching Grid Discretizations -- Heterogeneous Domain Decomposition Methods -- Fictitious Domain and Domain Imbedding Methods -- Variational Inequalities and Obstacle Problems -- Maximum Norm Theory -- Eigenvalue Problems -- Optimization Problems -- Helmholtz Scattering Problem.
Sommario/riassunto	Domain decomposition methods are divide and conquer methods for the parallel and computational solution of partial differential equations of elliptic or parabolic type. They include iterative algorithms for solving the discretized equations, techniques for non-matching grid discretizations and techniques for heterogeneous approximations. This book serves as an introduction to this subject, with emphasis on matrix formulations. The topics studied include Schwarz, substructuring, Lagrange multiplier and least squares-control hybrid formulations, multilevel methods, non-self adjoint problems, parabolic equations,

saddle point problems (Stokes, porous media and optimal control), non-matching grid discretizations, heterogeneous models, fictitious domain methods, variational inequalities, maximum norm theory, eigenvalue problems, optimization problems and the Helmholtz scattering problem. Selected convergence theory is included.