1. Record Nr.   UNINA9910144634203321

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   Titolo   Stability Estimates for Hybrid Coupled Domain Decomposition Methods / / by Olaf Steinbach

   Pubbl/distr/stampa   Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 2003

   ISBN   3-540-36250-9

   Edizione   [1st ed. 2003.]

   Descrizione fisica   1 online resource (VI, 126 p.)

   Collana   Lecture Notes in Mathematics, , 0075-8434 ; ; 1809

   Disciplina   515.35

   Soggetti   Applied mathematics
                       Engineering mathematics
                       Numerical analysis
                       Differential equations, Partial
                       Applications of Mathematics
                       Numerical Analysis
                       Partial Differential Equations

   Lingua di pubblicazione   Inglese

   Formato   Materiale a stampa

   Livello bibliografico   Monografia

   Note generali   Bibliographic Level Mode of Issuance: Monograph

   Nota di bibliografia   Includes bibliographical references (pages [117]-120).

   Nota di contenuto   Preliminaries -- Sobolev Spaces: Saddle Point Problems; Finite Element Spaces; Projection Operators; Quasi Interpolation Operators -- Stability Results: Piecewise Linear Elements; Dual Finite Element Spaces; Higher Order Finite Element Spaces; Biorthogonal Basis Functions -- The Dirichlet-Neumann Map for Elliptic Problems: The Steklov-Poincare Operator; The Newton Potential; Approximation by Finite Element Methods; Approximation by Boundary Element Methods -- Mixed Discretization Schemes: Variational Methods with Approximate Steklov-Poincare Operators; Lagrange Multiplier Methods -- Hybrid Coupled Domain Decomposition Methods: Dirichlet Domain Decomposition Methods; A Two-Level Method; Three-Field Methods; Neumann Domain Decomposition Methods;Numerical Results; Concluding Remarks -- References.

   Sommario/riassunto   Domain decomposition methods are a well established tool for an efficient numerical solution of partial differential equations, in particular for the coupling of different model equations and of different

discretization methods. Based on the approximate solution of local boundary value problems either by finite or boundary element methods, the global problem is reduced to an operator equation on the skeleton of the domain decomposition. Different variational formulations then lead to hybrid domain decomposition methods. .