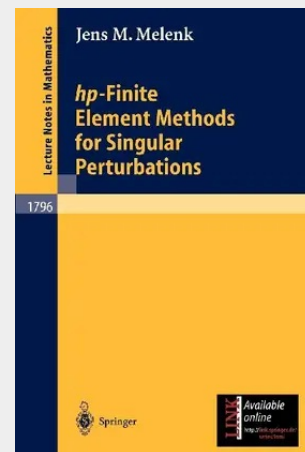


hp-Finite Element Methods for Singular Perturbations

Many partial differential equations arising in practice are parameter-dependent problems that are of singularly perturbed type. Prominent examples include plate and shell models for small thickness in solid mechanics, convection-diffusion problems in fluid mechanics, and equations arising in semi-conductor device modelling. Common features of these problems are layers and, in the case of non-smooth geometries, corner singularities. Mesh design principles for the efficient approximation of both features by the hp-version of the finite element method (hp-FEM) are proposed in this volume. For a class of singularly perturbed problems on polygonal domains, robust exponential convergence of the hp-FEM based on these mesh design principles is established rigorously.

Many partial differential equations arising in practice are parameter-dependent problems that are of singularly perturbed type. Prominent examples include plate and shell models for small thickness in solid mechanics, convection-diffusion problems in fluid mechanics, and equations arising in semi-conductor device modelling. Common features of these problems are layers and, in the case of non-smooth geometries, corner singularities. Mesh design principles for the efficient approximation of both features by the hp-version of the finite element method (hp-FEM) are proposed in this volume. For a class of singularly perturbed problems on polygonal domains, robust exponential convergence of the hp-FEM based on these mesh design principles is established rigorously.



53,49 €

49,99 € (zzgl. MwSt.)

Lieferfrist: bis zu 10 Tage

Artikelnummer: 9783540442011

Medium: Buch

ISBN: 978-3-540-44201-1

Verlag: Springer

Erscheinungstermin: 10.10.2002

Sprache(n): Englisch

Auflage: 2002

Serie: Lecture Notes in Mathematics

Produktform: Kartoniert

Gewicht: 1060 g

Seiten: 326

Format (B x H): 155 x 235 mm

