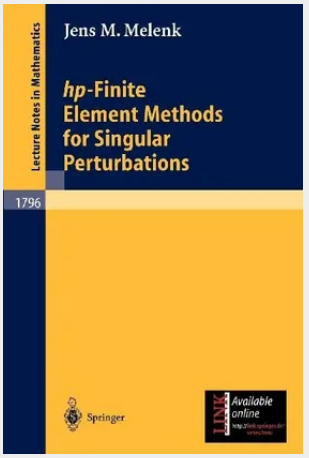
Melenk

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

Kundenservice Verlag Dr. Otto Schmidt KG
Neumannstraße 10, 40235 Düsseldorf | kundenservice@otto-schmidt.de | 0221-93738-997 (Inland)