



Finite Element Methods with B-Splines

By Klaus Hollig

Society for Industrial & Applied Mathematics, U.S. Paperback. Book Condition: new. BRAND NEW, Finite Element Methods with B-Splines, Klaus Hollig, The finite element method (FEM) has become the most widely accepted general-purpose technique for numerical simulations in engineering and applied mathematics. Principal applications arise in continuum mechanics, fluid flow, thermodynamics and field theory. In these areas, computational methods are essential and benefit strongly from the enormous advances in computer technology. B-splines play an important role in approximation and geometric modeling. They are used in data fitting, computer-aided design (CAD), automated manufacturing (CAM) and computer graphics. Finite Element Methods with B-Splines describes new weighted approximation techniques, combining the computational advantages of B-splines and standard finite elements. In particular, no grid generation is necessary, which eliminates a difficult and often time-consuming preprocessing step. The meshless methods are very efficient and yield highly accurate solutions with relatively few parameters. This is illustrated for typical boundary value problems in fluid flow, heat conduction and elasticity.



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