



## Adaptive Finite Element Methods for Differential Equations

By Wolfgang Bangerth

Birkhäuser Jan 2003, 2003. Taschenbuch. Book Condition: Neu. 244x170x12 mm. Neuware - These Lecture Notes have been compiled from the material presented by the second author in a lecture series ('Nachdiplomvorlesung') at the Department of Mathematics of the ETH Zurich during the summer term 2002. Concepts of 'self adaptivity' in the numerical solution of differential equations are discussed with emphasis on Galerkin finite element methods. The key issues are a posteriori error estimation and automatic mesh adaptation. Besides the traditional approach of energy-norm error control, a new duality-based technique, the Dual Weighted Residual method (or shortly DWR method) for goal-oriented error estimation is discussed in detail. This method aims at economical computation of arbitrary quantities of physical interest by properly adapting the computational mesh. This is typically required in the design cycles of technical applications. For example, the drag coefficient of a body immersed in a viscous flow is computed, then it is minimized by varying certain control parameters, and finally the stability of the resulting flow is investigated by solving an eigenvalue problem. 'Goal-oriented' adaptivity is designed to achieve these tasks with minimal cost. The basics of the DWR method and various of its applications are described...



[READ ONLINE](#)  
[ 6.96 MB ]

### Reviews

*Extensive guide! Its this kind of excellent read through. it absolutely was writtern very perfectly and helpful. Your way of life period is going to be change when you complete reading this ebook.*

-- **Murphy Dooley**

*The best book i at any time read. I am quite late in start reading this one, but better then never. I realized this publication from my dad and i advised this book to understand.*

-- **Raina Simonis**