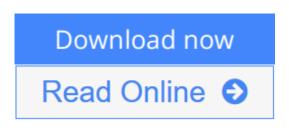


# An Analysis of the Finite Element Method 2nd Edition

By Gilbert Strang, George Fix



# **An Analysis of the Finite Element Method 2nd Edition** By Gilbert Strang, George Fix

A classic in the understanding of finite methods, this book spotlights finite element techniques theoretically and practically. The new Part II makes clear each step in using the finite element method: weak form of the equation, choice of trial and test functions, assembly of the stiffness matrix K (including MATLAB codes), and solution of KU=F. The book explains the three leading forms of finite element computations: the displacement method (assembled from element matrices); the mixed method for velocity and pressure (and the inf-sup condition); the Discontinuous Galerkin method--conservation laws & flux functions There are suggested exercises taken from the new book *Computational Science and Engineering* (also written by Gilbert Strang and published by Wellesley-Cambridge Press and SIAM).

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#### **Editorial Review**

#### Review

If you're a numerical analyst or an engineer interested in the basic theory of the finite element method, this book belongs on your shelf. If you have no interest in finite elements but enjoy well written mathematical literature, this book still belongs on your shelf. Though some sections are dated, the contents of this book remain a solid foundation for understanding the behavior of finite element techniques in theory and in practice. Furthermore, while the contents are mathematically rigorous, the authors largely avoid the theorem/lemma/proof of most mathematical books, and instead describe the analysis in an almost conversational tone. Reading Strang and Fix reminds me of reading Lanczos: the book is dense with ideas which are both mathematically and practically interesting, but the presentation is so smooth that one can almost read it as one reads a novel. --David S. Bindel, Berkeley, CA, September 11, 2005.

#### About the Author

Gilbert Strang is a Professor of Mathematics at Massachusetts Institute of Technology and an Honorary Fellow of Balliol College, of the University of Oxford, UK. His current research interests include linear algebra, wavelets and filter banks, applied mathematics, and engineering mathematics. He is the author or co-author of six textbooks and has published a monograph with George Fix titled An Analysis of the Finite Element Method. Professor Strang served as SIAM s president from 1999-2000, chaired the US National Committee on Mathematics from 2003 2004, and won the Neumann Medal of the US Association of Computational Mechanics in 2005. He is a fellow of the American Academy of Arts and Sciences.

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