

The Finite Element Method: An Introduction with Partial Differential Equations

By A. J. Davies



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The finite element method is a technique for solving problems in applied science and engineering. The essence of this book is the application of the finite element method to the solution of boundary and initial-value problems posed in terms of partial differential equations. The method is developed for the solution of Poisson's equation, in a weighted-residual context, and then proceeds to time-dependent and nonlinear problems. The relationship with the variational approach is also explained.

This book is written at an introductory level, developing all the necessary concepts where required. Consequently, it is well-placed to be used as a textbook for a course in finite elements for final year undergraduates, the usual place for studying finite elements. There are worked examples throughout and each chapter has a set of exercises with detailed solutions.



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Editorial Review

About the Author

Alan Davies is Professor of Mathematics at the University of Hertfordshire where his teaching and research is in numerical applied mathematics. He was the Head of the School of Physics, Astronomy and Mathematics until he retired in 2006 since when he has been able to concentrate on the communication of mathematics and physics through the department's outreach programme.

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