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Nota di contenuto	Preface to the first edition; Preface to the second edition; Flowchart of contents; Part I. Ordinary differential equations: 1. Euler's method and beyond; 2. Multistep methods; 3. Runge-Kutta methods; 4. Stiff equations; 5. Geometric numerical integration; 6. Error control; 7. Nonlinear algebraic systems; Part II. The Poisson equation: 8. Finite difference schemes; 9. The finite element method; 10. Spectral methods; 11. Gaussian elimination for sparse linear equations; 12. Classical iterative methods for sparse linear equations; 13. Multigrid techniques; 14. Conjugate gradients; 15. Fast Poisson solvers; Part III. Partial differential equations of evolution: 16. The diffusion equation; 17. Hyperbolic equations; Appendix. Bluffer's guide to useful mathematics: A.1. Linear algebra; A.2. Analysis; Bibliography; Index.
Sommario/riassunto	Numerical analysis presents different faces to the world. For mathematicians it is a bona fide mathematical theory with an applicable

flavour. For scientists and engineers it is a practical, applied subject, part of the standard repertoire of modelling techniques. For computer scientists it is a theory on the interplay of computer architecture and algorithms for real-number calculations. The tension between these standpoints is the driving force of this book, which presents a rigorous account of the fundamentals of numerical analysis of both ordinary and partial differential equations. The exposition maintains a balance between theoretical, algorithmic and applied aspects. This second edition has been extensively updated, and includes new chapters on emerging subject areas: geometric numerical integration, spectral methods and conjugate gradients. Other topics covered include multistep and Runge-Kutta methods; finite difference and finite elements techniques for the Poisson equation; and a variety of algorithms to solve large, sparse algebraic systems.

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