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Nota di contenuto	Part I: Algebraic Tensors -- 1 Introduction -- 2 Matrix Tools -- 3 Algebraic Foundations of Tensor Spaces -- Part II: Functional Analysis of Tensor Spaces -- 4 Banach Tensor Spaces -- 5 General Techniques -- 6 Minimal Subspaces -- Part III: Numerical Treatment -- 7 r-Term Representation -- 8 Tensor Subspace Represenation -- 9 r-Term Approximation -- 10 Tensor Subspace Approximation -- 11 Hierarchical Tensor Representation -- 12 Matrix Product Systems -- 13 Tensor Operations -- 14 Tensorisation -- 15 Multivariate Cross Approximation -- 16 Applications to Elliptic Partial Differential Equations -- 17 Miscellaneous Topics.
Sommario/riassunto	Special numerical techniques are already needed to deal with n × n matrices for large n. Tensor data are of size n × n ×...× n=nd, where nd exceeds the computer memory by far. They appear for problems of high spatial dimensions. Since standard methods fail, a particular tensor calculus is needed to treat such problems. This monograph describes the methods by which tensors can be practically treated and shows how numerical operations can be performed. Applications

include problems from quantum chemistry, approximation of multivariate functions, solution of partial differential equations, for example with stochastic coefficients, and more. In addition to containing corrections of the unavoidable misprints, this revised second edition includes new parts ranging from single additional statements to new subchapters. The book is mainly addressed to numerical mathematicians and researchers working with high-dimensional data. It also touches problems related to Geometric Algebra.