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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	1. Contact Problems and their Solution -- Part I. Basic Concepts -- 2. Linear Algebra -- 3. Optimization -- 4. Analysis -- Part II. Optimal QP and QCQP Algorithms -- 5. Conjugate Gradients -- 6. Gradient Projection for Separable Convex Sets -- 7. MPGP for Separable QCQP -- 8. MPRGP for Bound Constrained QP -- 9. Solvers for Separable and Equality QP/QCQP Problems -- Part III. Scalable Algorithms for Contact Problems -- 10. TFETI for Scalar Problems -- 11. Frictionless Contact Problems -- 12. Contact Problems with Friction -- 13. Transient Contact Problems -- 14. TBETI -- 15. Mortars -- 16. Preconditioning and Scaling -- Part IV. Other Applications and Parallel Implementation -- 17. Contact with Plasticity -- 18. Contact Shape Optimization -- 19. Massively Parallel Implementation -- Index.
Sommario/riassunto	This book presents a comprehensive and self-contained treatment of the authors' newly developed scalable algorithms for the solutions of multibody contact problems of linear elasticity. The brand new feature of these algorithms is theoretically supported numerical scalability and parallel scalability demonstrated on problems discretized by billions of

degrees of freedom. The theory supports solving multibody frictionless contact problems, contact problems with possibly orthotropic Tresca's friction, and transient contact problems. It covers BEM discretization, jumping coefficients, floating bodies, mortar non-penetration conditions, etc. The exposition is divided into four parts, the first of which reviews appropriate facets of linear algebra, optimization, and analysis. The most important algorithms and optimality results are presented in the third part of the volume. The presentation is complete, including continuous formulation, discretization, decomposition, optimality results, and numerical experiments. The final part includes extensions to contact shape optimization, plasticity, and HPC implementation. Graduate students and researchers in mechanical engineering, computational engineering, and applied mathematics, will find this book of great value and interest.
