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Disciplina	530
Soggetti	Solid state physics Mechanics Mechanics, Applied Mathematical physics Materials science Amorphous substances Complex fluids Solid State Physics Solid Mechanics Mathematical Applications in the Physical Sciences Characterization and Evaluation of Materials Soft and Granular Matter, Complex Fluids and Microfluidics
Lingua di pubblicazione	Inglese
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Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Crystals -- Framework of crystal elasticity -- Quasicrystals and their properties -- The physical basis of elasticity of solid quasicrystals -- Elasticity theory of one-dimensional quasicrystals and simplification.- Elasticity theory of two-dimensional quasicrystals and simplification -- Application I—Some dislocation and interface problems and solutions of one- and two-dimensional quasicrystals -- Application II—Solutions of notch and crack problems of one- and two-dimensional quasicrystals -- Elasticity of three-dimensional quasicrystals and its applications -- Phonon-phason dynamics and defects dynamics of solid quasicrystals -- Complex analysis method -- Variational principles of elasticity of quasicrystals, numerical analysis and

applications -- Some mathematical principles on solutions of elasticity of quasicrystals -- Nonlinear behaviour of solid quasicrystals -- Fracture theory of solid quasicrystals -- Hydrodynamics of quasicrystals -- Conclusion remarkable.

Sommario/riassunto

This interdisciplinary work on condensed matter physics, the continuum mechanics of novel materials, and partial differential equations, discusses the mathematical theory of elasticity and hydrodynamics of quasicrystals, as well as its applications. By establishing new partial differential equations of higher order and their solutions under complicated boundary value and initial value conditions, the theories developed here dramatically simplify the solution of complex elasticity problems. Comprehensive and detailed mathematical derivations guide readers through the work. By combining theoretical analysis and experimental data, mathematical studies and practical applications, readers will gain a systematic, comprehensive and in-depth understanding of condensed matter physics, new continuum mechanics and applied mathematics. This new edition covers the latest developments in quasicrystal studies. In particular, it pays special attention to the hydrodynamics, soft-matter quasicrystals, and the Poisson bracket method and its application in deriving hydrodynamic equations. These new sections make the book an even more useful and comprehensive reference guide for researchers working in Condensed Matter Physics, Chemistry and Materials Science.