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Nota di contenuto	Preface -- 1.M. Baake, M. Birkner and U. Grimm: Non-Periodic Systems with Continuous Diffraction Measures -- 2.S. Akiyama, M. Barge, V. Berthé, J.-Y. Lee and A. Siegel: On the Pisot Substitution Conjecture -- 3. L. Sadun: Cohomology of Hierarchical Tilings -- 4.J. Hunton: Spaces of Projection Method Patterns and their Cohomology -- 5.J.-B. Aujogue, M. Barge, J. Kellendonk, D. Lenz: Equicontinuous Factors, Proximality and Ellis Semigroup for Delone Sets -- 6.J. Aliste-Prieto, D. Coronel, M.I. Cortez, F. Durand and S. Petite: Linearly Repetitive Delone Sets -- 7.N. Priebe Frank: Tilings with Infinite Local Complexity -- 8. A.

Julien, J. Kellendonk and J. Savinien: On the Noncommutative Geometry of Tilings -- 9.D. Damanik, M. Embree and A. Gorodetski: Spectral Properties of Schrödinger Operators Arising in the Study of Quasicrystals -- 10.S. Puzynina and L.Q. Zamboni: Additive Properties of Sets and Substitutive Dynamics -- 11.J.V. Bellissard: Delone Sets and Material Science: a Program.

Sommario/riassunto

What is order that is not based on simple repetition, that is, periodicity? How must atoms be arranged in a material so that it diffracts like a quasicrystal? How can we describe aperiodically ordered systems mathematically? Originally triggered by the – later Nobel prize-winning – discovery of quasicrystals, the investigation of aperiodic order has since become a well-established and rapidly evolving field of mathematical research with close ties to a surprising variety of branches of mathematics and physics. This book offers an overview of the state of the art in the field of aperiodic order, presented in carefully selected authoritative surveys. It is intended for non-experts with a general background in mathematics, theoretical physics or computer science, and offers a highly accessible source of first-hand information for all those interested in this rich and exciting field. Topics covered include the mathematical theory of diffraction, the dynamical systems of tilings or Delone sets, their cohomology and non-commutative geometry, the Pisot substitution conjecture, aperiodic Schrödinger operators, and connections to arithmetic number theory.