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Nota di contenuto	Part 1. Regular continued fractions: Chapter 1. Classical notions and definitions -- Chapter 2. On integer geometry -- Chapter 3. Geometry of regular continued fractions -- Chapter 4. Complete invariant of integer angles -- Chapter 5. Integer trigonometry for integer angles -- Chapter 6. Integer angles of integer triangles -- Chapter 7. Quadratic forms and Makov spectrum. -- Chapter 8. Geometric continued fractions -- Chapter 9. Continuant representation of GL(2,Z) Matrices -- Chapter 10. Semigroup of Reduced Matrices -- Chapter 11. Elements of Gauss reduction theory -- Chapter 12. Lagrange’s theorem -- Gauss-Kuzmin statistics -- Chapter 14. Geometric aspects of approximation -- Chapter 15. Geometry of continued fractions with real elements and Kepler’s second law -- Chapter 16. Extended integer angles and their summation -- Chapter 17. Integer angles of polygons

and global relations for toric singularities -- Part II. Multidimensional continued fractions -- Chapter 18. Basic notations and definitions of multidimensional integer geometry -- Chapter 19. On empty simplices, pyramids, parallelepipeds -- Chapter 20. Multidimensional continued fractions in the sense of Klein -- Chapter 21. Dirichlet groups and lattice reduction -- Chapter 22. Periodicity of Klein polyhedral. Generalization of Lagrange's Theorem -- Chapter 23. Multidimensional Gauss-Kuzmin Statistics -- Chapter 24. On the construction of multidimensional continued fractions -- Chapter 25. Gauss reduction in higher dimensions. Chapter 26. Approximation of maximal commutative subgroups -- Capter 27. Other generalizations of continued fractions. References. Index.

Sommario/riassunto

This book introduces a new geometric vision of continued fractions. It covers several applications to questions related to such areas as Diophantine approximation, algebraic number theory, and toric geometry. The second edition now includes a geometric approach to Gauss Reduction Theory, classification of integer regular polygons and some further new subjects. Traditionally a subject of number theory, continued fractions appear in dynamical systems, algebraic geometry, topology, and even celestial mechanics. The rise of computational geometry has resulted in renewed interest in multidimensional generalizations of continued fractions. Numerous classical theorems have been extended to the multidimensional case, casting light on phenomena in diverse areas of mathematics. The reader will find an overview of current progress in the geometric theory of multidimensional continued fractions accompanied by currently open problems. Whenever possible, we illustrate geometric constructions with figures and examples. Each chapter has exercises useful for undergraduate or graduate courses.