Cube-a Window To Convex And Discrete Geometry

Analysis, Algebra, Combinatorics, Graph Theory, Hyperbolic Geometry, Number Theory.This tract has two purposes: to show what is known about the n-dimensional unit cubes and to demonstrate how Analysis, Algebra, Combinatorics, Graph Theory, Hyperbolic Geometry, Number Theory, can be applied to the study of them. The unit cubes, from any point of view, are among the most important and fascinating objects in an n-dimensional Euclidean space. However, our knowledge about them is still quite limited and many basic problems remain unsolved. In this Tract eight topics about the unit cubes are introduced: cross sections, projections, inscribed simplices, triangulations, 0/1 polytopes, Minkowski's conjecture, Furtwangler's conjecture, and Keller's conjecture. In particular the author demonstrates how deep analysis like log concave measure and the Brascamp-Lieb inequality can deal with the cross section problem, how Hyperbolic Geometry helps with the triangulation problem, how group rings can deal with Minkowski's conjecture and Furtwangler's conjecture, and how Graph Theory handles Keller's conjecture. EAN/ISBN : 9780511138317 Publisher(s): Cambridge University Press Format: ePub/PDF Author(s): Zong, Chuanming

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