

On the smallest determinants of matrix lattices

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Abstract

An analysis of multiantenna radio communications motivates the problem of studying the minimum absolute value of determinants of matrices carved from a lattice. This is a relatively natural problem in geometry of numbers. We give a survey of our findings, describe the so called pigeon hole bound, and pit it against suggested constructions of lattices. This is done mostly to set up the stage for Toni Ernvall's presentation, where he presents a general construction achieving the pigeon hole bound.