数論セミナー

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Title:
Hausdorff dimension of sets with restricted, slowly growing partial quotients

Abstract:
I. J. Good (1941) showed that the set of irrational numbers in (0,1) whose partial quotients a(n) tend to infinity is of Hausdorff dimension 1/2. A number of related results impose restrictions of the type a(n)¥in B or a(n)>f(n), where B is an infinite subset of N and f is a rapidly growing function with n. We show that, for an arbitrary B and an arbitrary f with values in [¥min B, ¥infty) and tending to infinity, the set of irrational numbers in (0,1) whose partial quotients grows to infinity no faster than f is of Hausdorff dimension t(B)/2, where t(B) is the exponent of convergence of B. As a corollary, this result yields an alternative proof of Hirst's conjecture solved by Wang and Wu.

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