

Diophantine approximation and Probability

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I will describe some questions concerning distribution of sequences modulo one, Diophantine approximation and applications of probability measures to these topics.

Here is a question which is still open:

Given any pair of real numbers x and y Littlewood conjectured that

$$\inf_{q \in \mathbb{Z}^+} q \|qx\| \|qy\| = 0.$$

(Here $\|x\| = \inf_{n \in \mathbb{Z}} |x - n|$ the distance from x to the nearest integer.)

I will discuss this questions and others that are related to it.