DOUGLAS C. BOWMAN, Northern Illinois University, USA

Integers n for which the integer parts of $n \times \alpha + s$ are not equal to the integer parts of $n \times \beta + s$

(Joint work with Alexandru Zaharescu)

Let α and β be positive real numbers and s a real number satisfying $0 \leq s < 1$. Let $\lfloor x \rfloor$ denote the greatest integer $\leq x$. Define $\Psi_k(\alpha, \beta\,;\, s)$ to be the k-th positive integer n such that $\lfloor n\alpha + s \rfloor \neq \lfloor n\beta + s \rfloor$. For $i = 1, 2$ we compute asymptotics for the probability that $\Psi_i(\alpha, \beta\,;\, 0) > Q$ for Q large as α and β range independently over a subinterval of $[0, 1)$. We find the expected value of $\Psi_1(\beta, \alpha\,;\, 0)$ as α and β range independently over $[0, 1)$. When α, β, and s are fixed, the algebraic structure of the set of natural numbers $\{\Psi_i(\beta, \alpha\,;\, s) \mid i \in \mathbf{Z}^+\}$ is characterized.