
DIVYUM SHARMA, University of Waterloo

Joint distribution of the base- q and Ostrowski digital sums

In 1922, A. Ostrowski introduced a numeration system based on the denominators of the convergents in the continued fraction expansion of a fixed irrational number α . Coquet, Rhin and Toffin studied the joint distribution in residue classes of the base- q sum-of-digits function S_q and the Ostrowski sum-of-digits function S_α . They gave certain sufficient conditions for the set

$$\{n \in \mathbb{N} : S_q(n) \equiv a_1 \pmod{m_1}, S_\alpha(n) \equiv a_2 \pmod{m_2}\}$$

to have asymptotic density $1/m_1m_2$. In this talk, we present a quantitative version of their result when

$$\alpha = [0; \overline{1, m}], \quad m \geq 2.$$