

Title: A common structure of n_k 's for which $n_k\alpha \bmod 1 \rightarrow x$

Author(s): Štefan Porubský and Oto Strauch

Let α be an irrational number and $\varepsilon_k \leq 1$, $k = 1, 2, \dots$, be an arbitrary decreasing sequence of real numbers such that $\varepsilon_k \rightarrow 0$. In this paper we show a construction of sequences n_k , $k = 1, 2, \dots$, for which the fractional parts $\{n_k\alpha\} \rightarrow x$, where $x \in [0, 1]$ is fixed but arbitrary and $k/n_k \geq \varepsilon_k$ for $k = 1, 2, \dots$. Here $\{n_k\alpha\} \in I_j$ for $k_{j-1} < k \leq k_j$ and the length $|I_j| = \{h_j\alpha\}$, where h_j is a positive integer for $j = 1, 2, \dots$. The increasing sequence k_j is independent of x . Moreover, the differences $n_{k+1} - n_k$ satisfy the three gaps property with parameters a_j, b_j and $a_j + b_j$ not depending on x for every $k_{j-1} < k < k_j$ and $j = 2, 3, \dots$.

Address:

Štefan Porubský
Institute of Computer Sciences
Academy of Sciences
of the Czech Republic
Pod Vodárenskou věží 2
182 07 Prague 8
Czech Republic

Address:

Oto Strauch
Mathematical Institute
Slovak Academy of Sciences
Štefánikova 49
SK-814 73 Bratislava
Slovak Republic