Erdős, Pál; Komornik, V.
Developments in non-integer bases. (English) Zbl 0906.11008
Acta Math. Hung. 79, No. 1-2, 57-83 (1998).

For a fixed real number $q > 1$, the sequence $0 = y_0 < y_1 < y_2 < \dots$ of those real numbers y is considered which have at least one representation of the form

$$y = \varepsilon_0 + \varepsilon_1 q + \dots + \varepsilon_n q^n, \quad n \geq 0,\ \varepsilon_i \in \{0, 1\}.$$

It is shown that $y_{k+1} - y_k$ tends to zero for all q between 1 and $2^{1/4}$, except possibly the square root of the second Pisot number $\sqrt{p_2} \approx 1.175$. Moreover, for each such q there exists a sequence (ε_i), $\varepsilon_i \in \{0, 1\}$, such that $\sum_{i>1} \varepsilon_i q^{-i} = 1$. In particular, for each such q there even exists a development containing all possible finite variations of the digits 0 and 1.

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MSC:

11A67	Other number representations
11R06	PV-numbers and generalizations; other special algebraic numbers; Mahler measure

Keywords:

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