Year: 2009 **Vol.: 74** **Fasc.: 1-2**

Title: ε-shift radix systems and radix representations with shifted digit sets

Author(s): Paul Surer

Let $\varepsilon \in [0,1)$, $\mathbf{r} \in \mathbb{R}^d$ and define the mapping $\tau_{\mathbf{r},\varepsilon} : \mathbb{Z}^d \to \mathbb{Z}^d$ by

$$\tau_{\mathbf{r},\varepsilon}(\mathbf{z}) = (z_1, \dots, z_{d-1}, -\lfloor \mathbf{r}\mathbf{z} + \varepsilon \rfloor) \quad (\mathbf{z} = (z_0, \dots, z_{d-1})).$$

If for each $\mathbf{z} \in \mathbb{Z}^d$ there is a $k \in \mathbb{N}$ such that the k-th iterate of $\tau_{\mathbf{r},\varepsilon}$ satisfies $\tau_{\mathbf{r},\varepsilon}^k(\mathbf{z}) = \mathbf{0}$ we call $\tau_{\mathbf{r},\varepsilon}$ an *ε-shift radix system*. In the present paper we unify classical shift radix systems ($\varepsilon = 0$) and symmetric shift radix systems ($\varepsilon = \frac{1}{2}$), which have already been studied in several papers and analyse the relation of ε-shift radix systems to β-expansions and canonical number systems with shifted digit sets. At the end we will state several characterisation results for the two dimensional case.

Address:
Paul Surer
Chair of Mathematics and Statistics
University of Leoben
A-8700 Leoben
AUSTRIA