

Institut f. Analysis und Computational Number Theory (Math. A)

Zahlentheoretisches Kolloquium

Freitag, 4. Juli 2014, 16:00 Uhr, s.t.

Seminarraum C 208, 2. Stock, Steyrergasse 30, TU Graz

Van der Corput sets

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In the present talk we want to construct normal numbers with respect to a given shift invariant measure.

Let A be an (finite or infinite) alphabet and let $T: A^{\mathbb{N}} \rightarrow A^{\mathbb{N}}$ be the shift map defined by $T((a_n)_{n \geq 1}) = (a_{n+1})_{n \geq 1}$. We call

$$[c_1, \dots, c_k] = \{(a_n)_{n \geq 1} \in A^{\mathbb{N}} : a_1 = c_1, \dots, a_k = c_k\}$$

the cylinder set of all infinite words starting with the letters c_1, \dots, c_k . Given an invariant probability measure μ we call $\omega \in A^{\mathbb{N}}$ normal (generic) with respect to μ provided that for each cylinder set C

$$\frac{1}{N} \sum_{n=0}^{N-1} \mathbb{1}_C(T^n \omega) \xrightarrow{N \rightarrow \infty} \mu(C),$$

where $\mathbb{1}_C$ denotes the indicator function of C .

The aim of the present talk is to provide a Champernowne type construction which yields (under some mild conditions) a normal word with respect to any given shift invariant measure.

R. Tichy