数論セミナーのお知らせ

日時: 2024 年 2 月 7 日 (水) 10:00〜
場所: B718
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タイトル: Quaternion Expansions
アブストラクト:

In this presentation, we consider a positional numeration system in $\mathbb{R}^n$ called the rotational beta expansion. The expansion of an element z is a sum of the form

$$z = (\beta M)^{-1} d_1 + (\beta M)^{-2} d_2 + \cdots,$$

where the radix is βM for some fixed real number $\beta > 1$ and matrix $M \in O(n)$. We reformulate the rotational beta expansion where $M \in SO(2^n)$ into the so-called q-expansion on the 2^n-dimensional Cayley-Dickson algebra when $n \leq 3$. In particular, we obtain necessary and sufficient conditions for a q-expansion over the skew field $\mathbb{H}$ of real quaternions to be periodic when the base q is a Pisot quaternion.

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