Some aspects of a multicontinued fraction algorithm

Shin-ichi Yasutomi
General Education, Suzuka National College of Technology, Shiroko Suzuka Mie, 510-0294 Japan
yasutomi@genl.suzuka-ct.ac.jp

Abstract

Tamura and I introduced a new algorithm [1] called algebraic Jacobi-Perron algorithm which is something like the modified Jacobi-Perron algorithm and gave some computer experiments by which we can expect that the expansion obtained by our algorithm for $\underline{\alpha} = (\alpha_1, \ldots, \alpha_s) \in K^s$ (with some natural conditions on $\underline{\alpha}$) becomes periodic for any real number field K as far as $s + 1 = deg_{\mathbb{Q}}(K) \leq 4$. But, it seems very likely that the algorithm will not work well if $deg_{\mathbb{Q}}(K) = 5$. In this talk we give a new algorithm and discuss some properties and experimental results by which we can expect that the expansion of $\underline{\alpha}$ by the new algorithm always becomes periodic for any real number field K with $deg_{\mathbb{Q}}(K) \leq 5$. We can define the algebraic Jacobi-Perron algorithm(AJPA) on formal power series $\mathbb{Q}((t^{-1}))$. We also present a two dimensional version of our conjecture related to AJPA on formal power series.

[1]J. Tamura and S. Yasutomi; A new multidimensional continued fraction Algorithm, Math. Comp. 78 (2009), 2209-2222.