

# Plans of my research

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As I write in “Summary of my research”, we obtain a substitution system generating Sturmian sequence of finite letters. This sequence is a coding sequence of certain initial point. As a result, a coding sequence given by disrupting the circle into some arcs is generated by the continued fraction expansion of rotation number and the dual Ostrowski expansions of the endpoints of partition. In detail, first the dual Ostrowski expansions of the endpoints of partition are determined by rotation number. Each digit of those expansions and the comparison of its tail digits under lexicographic order decide substitution system. Hence by researching the property of dual Ostrowski expansion carefully, we can see the property of this sequence.

For examples, the fact that this substitution system is periodic means what property rotation number and endpoints have, this is a problem. It is known that the continued fraction expansion of quadratic irrational is periodic. By the result of research of Similar object, I expect that if rotation number  $\alpha$  is quadratic irrational and endpoints belong to  $\mathbb{Q}(\alpha)$ , then it is periodic. I hope to see such number-theoretic proposition.

I want also to try to construct the substitution system generating the coding sequence (right infinite or two-sided infinite) of arbitrary initial point. In fact, continued fraction expansion and Ostrowski expansion have varieties. I think that it has strong possibility that using appropriate one, I can obtain a similar construction satisfying above request.

Moreover I expect that when by these way, similar construction is obtained, by comparing these, I will see something new.

In the case of 2 letters Sturmian sequence, it is known that it is determined by substitution systems. Furthermore irreducible decomposition of substitution system generating 2 letters Sturmian sequence is also known. With respect to substitution system we get generating 3 or more letters Sturmian sequence, I expect that I can show that there exists similar irreducible decomposition of its. In particular, I will try to consider the property of 3 letters Sturmian sequence first.

The Dimension group of Denjoy system is not decided only if double orbit number is infinite. To reform the way of computation of the finite case appropriately, I will determine it.