Plans of my research

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As I write in Summary, we obtain a substitution system generating generalized Sturmian sequence. This is obtained by coding of the partition of the circle into several arcs, the initial point α and the irrational rotation $R_\alpha : x \mapsto x + \alpha \pmod 1$. This substitution system is obtained by some arithmetic method: the simple continue fraction expansion of the rotation number α and the dual Ostrowski expansion of the endpoints of the partition.

I try to construct a substitution system generating a coding sequence (one-sided infinite or two-sided infinite) of any given initial point. It has been already known that the 2-letter case is obtained by the Ostorwski expansion of the initial point. I hope that in addition to the initial point, by considering the expansion of the endpoints of the partition, one can describe the substitution system for the case of more than 2-letter cases.

For the result given in [3] of Denjoy systems, applying the method called Rauzy induction, I want to analyze it more precisely. This is corresponding to giving a factorization of substitutions in [1].

Denjoy systems associate to irrational rotations, and irrational rotations are 2-interval exchanges. For 3-interval exchanges, I want to analyze arithmetically by using Rauzy induction. Interval exchanges which is essentially 2 or 3-interval exchange belong to the class called rotation class. By using Rauzy induction, I expect that interval exchanges in rotation class can be analyzed, and can be described arithmetically.

For Denjoy systems with countable infinite double orbit number, the construction of its adic model and the calculation of its dimension group have not been done yet. By applying the method of [3], I expect to determine these.