

Substitutions on countable alphabets

Dan Rust

The Open University

Abstract. In recent years, several important works on substitutions over infinite alphabets have appear and it is now clear that understanding the dynamics of these kinds of substitutions will be useful in the study of dynamical systems in general. In this talk, I will present some recent progress on building a systematic foundation for this program, concentrating on compact Hausdorff alphabets. I'll introduce natural generalisations of classical concepts like legal words, repetitivity, primitivity, etc., and report on an attempt to characterise unique ergodicity of these systems, where surprisingly, primitivity is not sufficient. As Perron-Frobenius theory fails in infinite dimensions, more sophisticated technology from the theory of positive operators is employed. There are still lots of open questions, and so a ground-level introduction to these systems will hopefully be approachable and stimulating.

This is joint work with Neil Manibo and Jamie Walton.