Title: Symbolic representations of compact spaces

Author: Alexandr Kazda

Department: Department of Algebra

Supervisor: Prof. RNDr. Petr Kůrka, CSc.

Supervisor's e-mail address: kurka@cts.cuni.cz

Abstract: The thesis concerns itself with Möbius number systems. These systems represent points using sequences of Möbius transformations. We are mainly interested in representing the unit circle (which is equivalent to representing $\mathbb{R} \cup \{\infty\}$).

The main aim of the thesis is to improve already known tools for proving that a given subshift–iterative system pair is in fact a Möbius number system. We also study the existence problem: How to describe iterative systems resp. subshifts for which there exists a subshift resp. iterative system such that the resulting pair forms a Möbius number system. While we were unable to provide a complete answer to this question, we present both positive and negative partial results.

As Möbius number systems are also subshifts, we can ask when a given Möbius number system is sofic. We give this problem a short treatment at the end of our thesis.

Keywords: Möbius transformation, numeral system, subshift