Journal of Automata, Languages and Combinatorics **4** (1999) 1, 59–71

GENERALIZED PREFIX RELATIONS AND CODES WITH FINITE DECODING DELAY [1]

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ABSTRACT

In this paper, we propose a generalized prefix relation which is called the generalized G-prefix relation for a language G. We show that a code X with decoding delay d is a $(X^dA^*)(X^dA^*)^{-1}$-prefix set. Based on this idea, the construction of embedding a prefix code into a complete one can be extended to the construction of embedding a code with decoding delay d into a complete one.

Keywords: generalized prefix relations, G-prefix kernels, G-prefix roots, codes with finite decoding delay, rational codes, thin codes, complete codes.

1. Introduction

It is well known that the prefix relation on a free monoid A^* generated by a set A is an important and basic concept in the theory of codes. The prefix codes, formed by the prefix relation, is an important family of codes not only in applications but also in the theory of codings. The codes with decoding delay d generalize the prefix codes, however, we notice that many properties of the prefix codes and the methods can not be generalized or applied to the codes with decoding delay $d \neq 0$. For instance, the

[1]This research was supported by The Applied Basic Research Foundation (96a001z) of Yunnan Province and a UGC (HK) grant #2160092.