Journal of Automata, Languages and Combinatorics **11** (2006) 2, 189–208 © Otto-von-Guericke-Universität Magdeburg

A MONOIDAL INTERVAL OF CLONES OF SELFDUAL FUNCTIONS

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ABSTRACT

Let A be a 2p-element set, p prime, and let π be a fixed point-free permutation on A of order p. We study the interval of clones C on A such that C consists of functions that are selfdual with respect to π and C contains all unary functions with this property.

Keywords: Clone, monoidal interval, selfdual functions

1. Introduction

Clones are composition-closed families of finitary functions on a set. They are actively used in classifying finite algebras (see, e. g., [16]), since algebras with the same clone of term operations have very much in common. A well-known Galois correspondence (see, e. g. [9]) links clones with relational structures, and this link has been recently used to classify the complexity of combinatorial problems known as constraint satisfaction problems (see [3]). Thus the study of clones is motivated, in particular, by applications in universal algebra and in computer science. The set of all clones on a fixed set can be conveniently partitioned into classes where two clones belong to the same class (called monoidal interval – see the definition below) if they contain exactly the same unary functions. Again, the study of monoidal intervals originated in universal algebra (see [16]), and recently some known results on monoidal intervals were applied to investigate the complexity of certain constraint satisfaction problems related to hypergraph colouring [2]. In this paper, we study algebraic properties of certain monoidal intervals of clones of selfdual functions.