Journal of Automata, Languages and Combinatorics **9** (2004) 4, 399–406

VALENCE LANGUAGES GENERATED BY EQUALITY SETS

VESA HALAVA[1], TERO HARJU
Department of Mathematics and TUCS – Turku Centre for Computer Science
University of Turku, FIN-20014 Turku, Finland
e-mail: {vesa.halava, harju}@utu.fi

HENDRIK JAN HOOGEBOOM
Department of Computer Science, Leiden University
P.O. Box 9512, 2300 RA Leiden, The Netherlands
e-mail: hoogeboom@liacs.nl

and

MICHEL LATTEUX
Université des Sciences et Technologies de Lille
Bâtiment M3, 59655 Villeneuve d'Ascq Cédex, France
e-mail: latteux@lifl.fr

ABSTRACT

We consider the generalized equality set, i. e., the set of solutions of the generalized Post Correspondence Problem. Actually we study the solutions of a special instances where one of the morphisms is periodic and the begin word is a letter. We considering the languages defined by mapping the equality set by a coding, and prove that the family achieved is exactly family of regular valence languages over $\mathbb{Z}$.

Keywords: Regular valence grammar, morphism, equality sets, Post Correspondence Problem

1. Introduction

Valence grammars were introduced by Păun in [11]. In general, in these grammars the productions are associated an integer value, and the generated language consists of those words that have a derivation the valences of which add up to zero. It is rather easy to show that the family of regular valence languages equals the family of languages recognized by integer weighted finite automata, see [4, 5]. This family of languages is also equal to the family of languages recognized by blind counter automata as defined by Greibach in [3].

[1]Corresponding author.