

ON THE REGIONS OF INFLUENCE IN COMPLEX DECOMPOSITION FORMS OF FINITE FUNCTIONS¹

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ABSTRACT

In the present paper we study the correlation between the regions of influence of the functions taking part in the complex decomposition forms of a finite function and their regions of influence in the simple decomposition forms of that function.

Keywords: decomposition, regions of influence, finite functions.

1. Introduction

In the present paper we continue the study of the regions of influence in the decomposition forms of finite-valued functions initiated in [10]. The necessity for further development of the decomposition theory was justified there. We expanded the scope of the analyzed simple decompositions including forms, which were considered as trivial in the classical approach and we used regions of influence to estimate their efficiency. Here we consider how the regions of influence in the simple decompositions of a function combine into regions of influence in complex decompositions. Our goal is to establish to what extent the efficiency of the complex decomposition forms can be predicted from the simple ones in the framework of the proposed, more general, platform.

The terminology and notation used in this paper follow the terminology and notation outlined in [10]. In addition we accept the convention that the operations \cup and \cap on sets have precedence over \times to reduce the number of parentheses used in the expressions. In order to avoid confusion remember that whenever $X = \{x_1, x_2, \dots, x_n\}$ is a set of variables associated with the domains $\mathcal{X}_1, \mathcal{X}_2, \dots, \mathcal{X}_n$ respectively we use x , with or without indexes, to denote assignments of values to these variables from the corresponding domains. For example, x_1 is a variable on assignments, which embraces the whole X and should be distinguished from x_1 .

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