ON FINITE FUNCTIONS WITH NON-TRIVIAL ARITY GAP

SLAVCHO SHTRAKOV

Department of Computer Science
South-West University, 2700 Blagoevgrad, Bulgaria

E-mail: shtrakov@swu.bg
http://home.swu.bg/shtrakov

AND

JÖRG KOPPITZ*

Institute of Mathematics, University of Potsdam
14415 Potsdam, Germany

E-mail: koppitz@rz.uni-potsdam.de

Abstract

Given an \( n \)-ary \( k \)-valued function \( f \), \( \text{gap}(f) \) denotes the minimal number of essential variables in \( f \) which become fictive when identifying any two distinct essential variables in \( f \).

We particularly solve a problem concerning the explicit determination of \( n \)-ary \( k \)-valued functions \( f \) with \( 2 \leq \text{gap}(f) \leq n \leq k \). Our methods yield new combinatorial results about the number of such functions.

Keywords: essential variable, identification minor, essential arity gap.

2000 Mathematics Subject Classification: Primary: 03G25; Secondary: 05E05.

References


*The research was supported by the DFG project KO 1446/3-1.


Received 15 December 2009
Revised 14 January 2010