

AAA88 – 88th Workshop on General Algebra

June 19–22, 2014

Warsaw University of Technology, Stefan Banach International Mathematical Center, Warsaw Center of Mathematics and Computer Science

Warsaw, Poland

Associativity, preassociativity, and string functions

Erkko Lehtonen

Centro de Álgebra da Universidade de Lisboa, Portugal

erkko@campus.ul.pt

Coauthors: Jean-Luc Marichal (University of Luxembourg) and Bruno Teheux (University of Luxembourg)

In the theory of n -ary semigroups, the classical concept of associativity is generalized for n -ary operations. This concept has been further generalized for string-defined operations, i.e., functions $f: X^* \rightarrow X$, where X^* denotes the set of strings over an alphabet X . Marichal and Teheux recently introduced the concept of preassociativity, which generalizes associativity in a slightly different manner that does not involve any composition of functions.

We introduce the concept of associativity for string functions, i.e., unary operations on X^* . We discuss this new property and describe certain classes of associative string functions. Furthermore, we characterize preassociative functions as compositions of associative string functions with injective unary maps. Finally, we provide descriptions of associative and preassociative functions which depend only on input length.