

# Algebraic foundation of new discrete mathematical functions

Yu.M.Movsisyan  
(Yerevan State University)

One of the main research-problems of algebra is characterization of free algebras of a given variety, particularly, characterization of finitely generated free algebras of a given variety. For instance, it is commonly known that the free Boolean algebra on  $n$  free generators is isomorphic to the Boolean algebra of Boolean functions of  $n$  variables. The free distributive lattice on  $n$  free generators is isomorphic to the lattice of monotone Boolean functions of  $n$  variables. A problem posed by B.I. Plotkin in 1970s has required finding the varieties of algebras with analogous functional representations of free finitely generated algebras. In this talk we give a solution of this problem. As a consequence we obtain new discrete mathematical functions: De Morgan functions, quasi-De Morgan functions, bi-De Morgan functions, super-Boolean functions, Super-De Morgan