

Abstract: The work is focused on Boolean functions. At first, it describes the ways Boolean functions are represented. Besides the representation using truth-table, vector of values and *algebraic normal form* which are usually shown we also show some other representations like *univariate representation* and *trace representation*. Moreover, we explain the relations among these representations. Then summary of the theory of Boolean functions is given, in order to understand important properties of Boolean functions correctly. Finally, these properties are studied, their interconnection is explained and the following cryptographic criteria of Boolean functions are describe: *the algebraic degree, the nonlinearity, balancedness, resiliency* and *correlation immunity*.