

Tarannikov, Yu. V.

On correlation-immune and stable Boolean functions. (Russian) Zbl 1280.94128

Mat. Vopr. Kibern. 11, 91-148 (2002).

The weight $\text{wt}(f)$ of a Boolean function $f(x) = f(x_1, \dots, x_n)$ is the number of binary tuples $(\alpha_1, \dots, \alpha_n)$ such that $f(\alpha_1, \dots, \alpha_n) = 1$. The function f is called balanced if $\text{wt}(f) = \text{wt}(f \oplus 1) = 2^{n-1}$. A subfunction f' of f is a Boolean function obtained from f by substituting constants 0 or 1 for some variables of f . The function f is called correlation-immune of order m ($1 \leq m \leq n$) if $\text{wt}(f') = \text{wt}(f)/2^m$ for each of its subfunctions f' of $n - m$ variables. A balanced correlation-immune function of order m is called m -stable. In other words, the function f is m -stable if $\text{wt}(f') = 2^{n-m-1}$ for each of its subfunctions f' of $n - m$ variables.

This paper reviews most of the author's results obtained since 2001 concerning properties of m -stable correlation-immune functions.

Reviewer: Arkadzi Charniak (MR2269107)

MSC:

94D10 Boolean functions

94C11 Switching theory, applications of Boolean algebras to circuits and networks

62H20 Measures of association (correlation, canonical correlation, etc.)

Cited in **11** Documents