



Problem 2. «Orthogonal arrays»

Special Prize from the Program Committee!

Orthogonal arrays are closely connected with cryptographic Boolean functions. Namely, supports of correlation immune functions give orthogonal arrays when their elements are written as the rows of an array.

Given three positive integers n , t and λ such that $t < n$, we call t – $(2, n, \lambda)$ *orthogonal array* every $\lambda 2^t \times n$ binary array (i.e. matrix over the 2-element field) such that, in every subset of t columns of the array, every (binary) t -tuple appears in exactly λ rows. t is called the strength of this orthogonal array.

Find a 4– $(2, 11, \lambda)$ orthogonal array with minimal value of λ .