Abstract

On Covering Arrays

Tran van Trung

Institute for Experimental Mathematics
University of Duisburg-Essen

Covering arrays are combinatorial structures which generalize the notion of orthogonal arrays. Precisely, a t-covering array, $CA(N; t, k, v)$, of size N, strength t, is a $k \times N$ array with entries from a set of v symbols such that every $t \times N$ sub-array contains every t-tuple of symbols at least once as a column. Covering arrays have significant applications in the testing of software and hardware. One of the main questions about covering arrays is the problem of minimizing the size N for given values $t,\ k,\ v$.

We survey algebraic and combinatorial methods for constructing covering arrays of strength $t \geq 3$.