

Constructions for Retransmission Permutation Arrays

Jeff Dinitz, University of Vermont

Abstract

Recently, Li, Liu, Tan, Viswanathan, and Yang introduced a technique for resolving overlapping channel transmissions that used an interesting new type of combinatorial structure. In connection with this problem, they provided an example of a 4×4 array having certain desirable properties. We define a class of combinatorial structures, which we term "Retransmission Permutation Arrays" (or RPA's), that generalize the example that Li et. al. provided. These RPA's turn out to be arrays that are row latin and satisfy an additional property in each of the top two corners. We show that these arrays exist for all possible orders. We also define some extensions having additional properties, for which we provide some partial results.