

Maximin distance designs as an important class of space-filling designs are widely used in computer experiments, yet their constructions are challenging. We develop an efficient procedure to generate maximin Latin hypercube designs, as well as maximin multi-level fractional factorial designs, from existing orthogonal or nearly orthogonal arrays via level permutation and expansion. We show that the distance distributions of the generated designs are closely connected with the distance distributions and generalized word-length patterns of the initial designs. Examples are presented to show that our method outperforms many current prevailing methods.