CONSTRUCTION OF NESTED ORTHOGONAL LATIN HYPERCUBE DESIGNS

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Abstract: Nested Latin hypercube designs (LHDs) are proposed for conducting multiple computer experiments with different levels of accuracy. Orthogonality is shown to be an important feature. However, little is known about the construction of nested orthogonal LHDs. In this paper, we present methods to construct nested orthogonal LHDs with two or more layers, making use of orthogonal designs. The constructed designs possess the property that the sum of the elementwise products of any three columns is zero, which is shown to be desirable for factor screening.

Key words and phrases: Computer experiment; Nested Latin hypercube design; Orthogonal design; Orthogonality.