A Construction Method for Orthogonal Latin Hypercube Designs

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The Latin hypercube design is a popular choice of experimental design when computer simulation is used to study a physical process. These designs guarantee uniform samples for the marginal distribution of each single input. A number of methods have been proposed for extending the uniform sampling to higher dimensions. We show how to construct Latin hypercube designs in which all main effects are orthogonal. Our method can also be used to construct Latin hypercube designs with low correlation of first-order and second-order terms. Our method generates orthogonal Latin hypercube designs that can include many more factors than those proposed by Ye (1998).
This is a joint work with David M. Steinberg. Details can be found in our paper of "A Construction Method for Orthogonal Latin Hypercube Designs," Biometrika, 93, 279-288 (2006).

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