

Optimal design of experiments

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Abstrak

Optimal Design of Experiments offers a rare blend of linear algebra, convex analysis, and statistics. The optimal design for statistical experiments is first formulated as a concave matrix optimization problem. Using tools from convex analysis, the problem is solved generally for a wide class of optimality criteria such as D-, A-, or E-optimality. The book then offers a complementary approach that calls for the study of the symmetry properties of the design problem, exploiting such notions as matrix majorization and the Kiefer information matrix ordering. The results are illustrated with optimal designs for polynomial fit models, Bayes designs, balanced incomplete block designs, exchangeable designs on the cube, rotatable designs on the sphere, and many other examples.