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D-OPTIMAL WEIGHING DESIGNS FOR FOUR AND FIVE OBJECTS*

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Abstract. For $j = 4$ and $j = 5$ and all $d \geq j$, the maximum value of $\det XX^T$, where X runs through all $j \times d$ (0,1)-matrices, is determined along with a matrix X_0 for which the maximum determinant is attained. In the theory of statistical designs, X_0 is called a D-optimal design matrix. Design matrices that were previously thought to be D-optimal, are shown here to be D-optimal.

Key words. D-optimal design, weighing design

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