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PROPERTIES OF A COVARIANCE MATRIX WITH AN APPLICATION TO D-OPTIMAL DESIGN*

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Abstract. In this paper, a covariance matrix of circulant correlation, R, is studied. A pattern of entries in R^{-1} independent of the value ρ of the correlation coefficient is proved based on a recursive relation among the entries of R^{-1}. The D-optimal design for simple linear regression with circulantly correlated observations on $[a, b]$ $(a < b)$ is obtained if even observations are taken and the correlation coefficient is between 0 and 0.5.

Key words. D-optimality, Covariance matrix, Circulant correlation.

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