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Optimal designs for estimating the coefficients of the lower frequencies in trigonometric regression models

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Abstract In the common Fourier regression model we determine the optimal designs for estimating the coefficients corresponding to the lower frequencies. An analytical solution is provided which is found by an alternative characterization of c -optimal designs. Several examples are provided and the performance of the D -optimal design with respect to the estimation of the lower order coefficients is investigated. The results give a complete answer to an open question which was recently raised in the literature.

Keywords Trigonometric regression model · c -Optimal design · Chebyshev approximation · Two dimensional shape analysis