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The Diliberto-Straus algorithm in $L_1(X \times Y)$. (English) [Zbl 0536.41029]

The Diliberto-Straus algorithm is already a familiar tool for producing best approximations to bivariate functions in $C(S \times T)$ by sums of univariate functions in $C(S) + C(T)$. This paper investigates the performance of the algorithm in the space $C(S \times T)$ with the $L_1$-norm. In this case there are already examples where the algorithm is known not to converge but this paper shows that under certain mild hypotheses (equivalent to the initial function being smooth with respect to the subspace) the norms of the elements in the algorithm converge to the distance from the initial function to the subspace $C(S) + C(T)$ in the $L_1$-norm.

MSC:
41A50 Best approximation, Chebyshev systems

Keywords:
Diliberto-Straus algorithm; bivariate functions

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References:

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