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Approximation by certain positive linear operators

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Abstract: The research results presented here are concerned with the approximation by certain classes of positive linear operators. In the first part of this presentation we are interested in how non-multiplicative can a linear functional be. In order to give an answer to this question, we considered the generalized Chebyshev functional

$$T_L(f, g) := L(f \cdot g) - L(f) \cdot L(g),$$

for a positive linear functional L and we obtained the estimates as follows

$$|T_L(f, g)| \leq \mathcal{E}(L, f, g).$$

These inequalities have been applied in the case of known operators. The estimates for the differences of positive linear operators is another topic which will be presented. The results obtained are motivated by the recent results which give a solution to a problem proposed by A. Lupaş in [1]. One of the questions raised by him was to give an estimate for

$$B_n \circ \overline{\mathbb{B}}_n - \overline{\mathbb{B}}_n \circ B_n =: U_n - S_n,$$

where Bn are the Bernstein operators and Bn are the Beta operators.

References:

[1] A. Lupaş, The approximation by means of some linear positive operators, in Approximation Theory (M.W. Müller et al., eds), Akademie-Verlag, Berlin, 1995, 201-227.