

On direct inequalities for the classical Bernstein and Szász-Mirakyan operators

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This talk deals with the approximation of continuous functions by the classical Bernstein operators B_n and the Szász-Mirakyan operators S_t , in terms of the Ditzian-Totik modulus of smoothness ω_2^φ with the proper function φ .

Information about the rate of uniform convergence for both operators is given by the so-called direct inequalities,

$$\|B_n f - f\|_{[0,1]} \leq K_B \omega_2^\varphi \left(f; \frac{1}{\sqrt{n}} \right), \quad \varphi(x) = \sqrt{x(1-x)},$$

$$\|S_t f - f\|_{[0,\infty)} \leq K_S \omega_2^\varphi \left(f; \frac{1}{\sqrt{t}} \right), \quad \varphi(x) = \sqrt{x}.$$

Here, we focus on the absolute constants K_B and K_S . Asymptotic and non-asymptotic results are shown. We use a probabilistic approach, as well as a smoothing technique by considering approximants built from Steklov averages.

References

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