

# INEQUALITIES OF THE GENERALIZED JACKSON THEOREM TYPE FOR BEST APPROXIMATIONS.

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Let  $C$  be the space of  $2\pi$ -periodic continuous functions, equipped with the uniform norm, and let  $E(f)$  be the best approximation of function  $f$  by trigonometric polynomials of degree less or equal to  $n$  in the space  $C$ . It is well known that for all  $f \in C$  and  $n \in \mathbb{Z}_+$  the following inequality holds

$$(1) \quad E_n(f) \leq C(r, \gamma) \omega_r\left(f, \frac{\gamma^r}{n+1}\right),$$

where  $C$  depends only on its arguments,  $\omega_r(f, \cdot)$  denotes the modulus of continuity of order  $r$  for  $f$  in the space  $C$ . Inequalities of such kind play important role in approximation theory, and a large number of papers is devoted to their study in different directions. Inequalities like (1) are called direct theorems of approximation theory or generalized Jackson inequalities. There is a number of known approaches to establish such inequalities. We suggest very simple methods (with a lot of applications in the same time), which allow to establish inequalities analogous to generalized Jackson theorem for best approximations.

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