

JACKSON–STECHKIN TYPE INEQUALITIES WITH GENERALIZED MODULI OF CONTINUITY AND WIDTHS OF SOME CLASSES OF FUNCTIONS**M. Sh. Shabozov, K. Tukhliev**

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In the Hilbert space $L_{2,\mu}[-1, 1]$ with Chebyshev weight $\mu(x) := 1/\sqrt{1-x^2}$, we obtain Jackson–Stechkin type inequalities between the value $E_{n-1}(f)_{L_{2,\mu}}$ of the best approximation of a function $f(x)$ by algebraic polynomials of degree at most $n-1$ and the m th-order generalized modulus of continuity $\Omega_m(\mathcal{D}f; t)$, where \mathcal{D} is some second-order differential operator. For classes of functions $W_{p,m}^{(2r)}(\Psi)$ ($m, r \in \mathbb{N}$, $1/(2r) < p \leq 2$) defined by the mentioned modulus of continuity and a given majorant $\Psi(t)$ ($t \geq 0$), which satisfies certain constraints, we calculate the values of various n -widths in the space $L_{2,\mu}[-1, 1]$.

Keywords: best approximation, Chebyshev polynomials, generalized modulus of continuity of m th order, Chebyshev–Fourier coefficients, n -widths.

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