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APPROXIMATION OF SPACE CURVES BY POLYGONAL LINES IN L_p

A. A. Shabozova

We consider the class $H^{\omega_1,\omega_2,\ldots,\omega_m}$ of parametric curves in the m-dimensional Euclidean space whose coordinate curves belong to the classes $H^{\omega_i}[0,L]$ $(i=\overline{1,m})$, respectively; i.e., their moduli of continuity are dominated by the functions ω_i. We solve the problem of finding an upper bound for the mutual deviation in the norm of the space $L_p[0,L]$ $(1\le p<\infty)$ of two curves from this class under the condition that they intersect at N $(N\ge 2)$ points of the interval $[0,L]$. We also find the exact value for the upper bound of the deviation in the L_p metric of a curve Γ belonging to a class $H^{\omega_1,\ldots,\omega_m}$ defined by upper convex moduli of continuity $\omega_i(t)$, $i=\overline{1,m}$, from an interpolation polygonal line inscribed in this curve with N $(N\ge 2)$ interpolation nodes. The obtained results generalize V. F. Storchai's result on the approximation of continuous functions by interpolation polygonal lines in the metric of the space $L_p[0,L]$ $(1\le p\le\infty)$.

Keywords: parametric curves, modulus of continuity, interpolation broken lines.

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Adolat Azamovna Shabozova, doctoral student, Tajik National University, Dushanbe, 734025 Tajikistan, e-mail: shabozova91@mail.ru .

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