ON JAMET'S ESTIMATES FOR THE FINITE ELEMENT METHOD WITH INTERPOLATION AT UNIFORM NODES OF A SIMPLEX

N. V. Baĭdakova

We suggest a new geometric characteristic of a simplex. This characteristic tends to zero together with the characteristic introduced by Jamet in 1976. Jamet's characteristic was used in upper estimates for the error of approximation of the derivatives of a function on a simplex by the corresponding derivatives of the polynomial interpolating the values of the function at uniform nodes of the simplex. The use of our characteristic for controlling the form of an element of a triangulation allows us to perform a small finite number of operations. We present an example of a function with lower estimates for approximation of the uniform norms of the derivatives by the corresponding derivatives of the Lagrange interpolating polynomial of degree n. This example shows that, for a broad class of d-simplices, Jamet's estimates cannot be improved on the set of functions under consideration. On the other hand, for $d = 3$ and $n = 1$, we present an example showing that, in general, Jamet's estimates can be improved.

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Baĭdakova Nataliya Vasil'evna

Krasovskii Institute
of Mathematics and Mechanics,
Yekaterinburg, 620990 Russia.
Ural Federal University,
Yekaterinburg, 620002 Russia.
E-mail: baidakova@imm.uran.ru