Zbl 817.41006

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On an interpolation theoretical extremal problem. (In English)

Stud. Sci. Math. Hung. 29, No.1-2, 55-60 (1994). [0081-6906]

Let $w(x) = (1-x)^\alpha(1+x)^\beta$, $|x| < 1$, $\gamma = \min(\alpha, \beta) > -1$, be the Jacobi weight. The authors prove the evaluations:

$$\int_{-1}^{+1} w(x) \sum_{k=1}^{n} \ell_k^{2s}(x)dx \geq \frac{1}{s}\int_{-1}^{+1} w(x)dx - O\left(\frac{\log^2 n}{n}\right) \text{ if } \gamma > -1/2;$$

$$-O\left(\frac{\log^3 n}{n}\right), \text{ if } \gamma = -1/2; \ -O\left(\frac{\log^6 n}{n}\right), \text{ if } -1 < \gamma < -1,2,$$

for any system of nodes $1 \geq x_1 > x_2 > \cdots > x_n \geq -1$. The constants represented by "O" depend only on s. Here $\ell_k(x) = \prod_{i=1, i\neq k}^{n}(x - x_i)/(x_k - x_i)$ are the fundamental interpolation polynomials associated to the given system of nodes.

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Classification:
41A05 Interpolation
41A10 Approximation by polynomials
41A44 Best constants

Keywords:
interpolation