Sanikidze, D. G.
A remark on the application of Chebyshev nodes to the approximate calculation of singular integrals with Jacobi weight functions. (Russian) Zbl 0639.41017

A formula is studied for the computation of the integral
\[ \int_{-1}^{1} (1 - t)^p (1 + t)^q f(t)/(t - x) dt, \quad x \in (-1, +1), \quad p, q > -1, \]
for functions of the class \( H^{(\mu)} \) where \( f \in H^{(\mu)} \) \( \Leftrightarrow \) \( f^{(r)} \in H^{(\mu)} \). It is known, that for the remainder of the interpolating quadrature formula constructed by zeros corresponding to the Jacobi polynomials \( R_n \sim O(\ell n/n^{r+\mu}) \) holds. It is shown that the same estimation holds for the formula constructed by zeros of Chebyshev polynomials.

Reviewer: J. Kofroň

MSC:
41A55 Approximate quadratures
41A25 Rate of convergence, degree of approximation
42B20 Singular and oscillatory integrals (Calderón-Zygmund, etc.)
30E20 Integration, integrals of Cauchy type, integral representations of analytic functions in the complex plane

Keywords:
Hölder functions; remainder; interpolating quadrature formula; Jacobi polynomials; Chebyshev polynomials