Wang, Haiyong

Expansions of given functions in Gegenbauer polynomials are of central importance in approximation theory. Especially, the asymptotic behaviour of the resulting expansion coefficients, e.g. for the expansion in Legendre coefficients is highly relevant, and in this paper, the precise growth rate of the expansion coefficients is identified (that is, optimal estimates are given). The principal tool is a new form of the contour integral representation of the said Gegenbauer coefficients. Error estimates for truncated Gegenbauer expansions are provided too, as is for example a comparison of the aforementioned Legendre coefficients and Chebyshev coefficients.

Reviewer: Martin D. Buhmann (Gießen)

MSC:
41A65 Abstract approximation theory (approximation in normed linear spaces and other abstract spaces)
41A25 Rate of convergence, degree of approximation
41A10 Approximation by polynomials
65N35 Spectral, collocation and related methods for boundary value problems involving PDEs

Keywords:
Gegenbauer coefficients; optimal estimates; error bounds; Legendre coefficients; Chebyshev coefficients

Software:
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References:


