

Best polynomial approximation in Sobolev-Laguerre space

D. H. Kim

Abstract

We discuss properties of best polynomial approximation for functions in $\mathbf{W}^{N,2}[0, \infty; e^{-x}]$ for Sobolev inner product

$$\phi(f, g) := \sum_{k=0}^{N-1} \int_0^{\infty} f^{(k)}(x)g^{(k)}(x)e^{-x} dx + \gamma \int_0^{\infty} f^{(N)}(x)g^{(N)}(x)e^{-x} dx,$$

where $\gamma > 0$ and $N \geq 1$ is a positive integer.

1991 AMS SUBJECT CLASSIFICATION : 33C45.

KEY WORDS : ORTHOGONAL POLYNOMIALS.