
Zbl 0749.65014

Lewanowicz, Stanisław

Evaluation of Bessel function integrals with algebraic singularities.

J. Comput. Appl. Math. 37, No.1-3, 101-112 (1991).

The author derives a new method for the numerical evaluation of the integral $\int_0^1 (1-x)^\alpha x^\beta f(x) J_\nu(ax) dx$. Here α , β , ν and a are given constants; J_ν is the Bessel function of the first kind and order ν ; f is a sufficiently smooth function so that it can be expanded into a series of the shifted Jacobi polynomials. The proposed method is based on the series expansion for $J_\nu(ax)$.

A.Laforgia (Potenza)

Classification: 65D20 65D32 33C10

Keywords: Bessel function integrals with algebraic singularities; recurrence relations; shifted Jacobi polynomials; series expansion

doi:10.1016/0377-0427(91)90110-6