On weighted (0,2)-type interpolation

Margit Lénárd

P. Turán and his associates have started the study of (0,2)-interpolation, when the function values and the second order derivatives are given on a set of nodal points. J. Balázs introduced a generalization of this problem, the *weighted (0,2)-interpolation problem*, when the second order derivative y'' is substituted by $(wy)''$ with a weight function w (for $w = 1$ we get the original problem). Weighted (0,2)-interpolation and its generalization, weighted (0,1,3)-interpolation have been studied with different additional conditions. In this paper we study these problems in a unified way with and without additional constraints with respect to existence, uniqueness and representation (explicit formulae). We give sufficient conditions on the nodes and the weight function, for the problems to be regular. Examples for regular weighted (0,2)- and (0,1,3)-interpolation are given on the zeros of the classical orthogonal polynomials.