Alfaro, Manuel; **Rezola, M. Luisa**; **Pérez, Teresa E.**; **Piñar, Miguel A.**

On symmetric differential operators associated with Sobolev orthogonal polynomials: A characterization. (English) Zbl 0980.42018

Acta Appl. Math. 61, No. 1-3, 3-14 (2000).

Authors' abstract: "Given the Sobolev bilinear form

$$(f,g)_S = \langle u_0, fg\rangle + \langle u_1, f'g'\rangle,$$

with u_0 and u_1 linear functionals, a characterization of the linear second-order differential operators with polynomial coefficients, symmetric with respect to $(\cdot,\cdot)_S$ in terms of u_0 and u_1 is obtained. In particular, several interesting functionals u_0 and u_1 are considered, recovering as particular cases of our study, results already known in the literature".

Reviewer: Andrei Martínez Finkelshtein (Almeria)

MSC:

42C05 Orthogonal functions and polynomials, general theory of nontrigonometric harmonic analysis
33C45 Orthogonal polynomials and functions of hypergeometric type (Jacobi, Laguerre, Hermite, Askey scheme, etc.)

Keywords:

Sobolev orthogonal polynomials; classical orthogonal polynomials; Sobolev bilinear form; second order differential operator

Full Text: DOI