CONTINUOUS SYMMETRIZED SOBOLEV INNER PRODUCTS OF ORDER N (II)[*]

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Abstract. Given a symmetrized Sobolev inner product of order N, the corresponding sequence of monic orthogonal polynomials $\{Q_n\}$ satisfies $Q_{2n}(x) = P_n(x^2)$, $Q_{2n+1}(x) = xR_n(x^2)$ for certain sequences of monic polynomials $\{P_n\}$ and $\{R_n\}$. In this paper we consider the particular case when all the measures that define the symmetrized Sobolev inner product are equal, absolutely continuous and semiclassical. Under such restrictions, we give explicit algebraic relations between the sequences $\{P_n\}$ and $\{R_n\}$, as well as higher-order recurrence relations that they satisfy.

Key words. Sobolev inner product, orthogonal polynomials, semiclassical linear functionals, recurrence relation, symmetrization process

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