Sadjang, P.Njionou; **Koepf, W.**; **Foupouagnigni, M.**
On structure formulas for Wilson polynomials. (English) Zbl 1331.33011
Integral Transforms Spec. Funct. 26, No. 10, 1000-1014 (2015).

The difference operator D and its companion S are defined as

$$Df(x) = \frac{f(x+i/2) - f(x-i/2)}{2ix}, \quad Sf(x) = \frac{f(x+i/2) + f(x-i/2)}{2}.$$

The authors first give some general results with respect to these operators and then use these results to obtain a second order difference equation and a three term recurrence for the Wilson polynomials.

As the Wilson polynomials can be used to represent the continuous dual Hahn polynomials as a limiting expression, the above results specialize to this particular case.

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MSC:

33C20 Generalized hypergeometric series, ${}_pF_q$
33D45 Basic orthogonal polynomials and functions (Askey-Wilson polynomials, etc.)
42C05 General theory of orthogonal functions and polynomials

Keywords:

Wilson polynomials; quadratic lattices; difference equations; hypergeometric representation; structure relation; inversion formula; connection coefficients

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