

## ORTHOGONAL POLYNOMIALS ON A BI-LATTICE

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We investigate generalizations of the Charlier and the Meixner polynomials on the lattice  $\mathbb{N}$  and on the shifted lattice  $\mathbb{N} + 1 - \beta$ . We combine both lattices to obtain the bi-lattice  $\mathbb{N} \cup (\mathbb{N} + 1 - \beta)$  and show that the orthogonal polynomials on this bi-lattice have recurrence coefficients which satisfy a non-linear system of recurrence relations, which we can identify as a limiting case of an asymmetric discrete Painlevé equation. The asymptotic behavior of the recurrence coefficients is very sensitive to the initial conditions, which are in terms of modified Bessel functions and confluent hypergeometric functions. This is joint work with Christophe Smet.