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Moment Representations of Type I X_2 Exceptional Laguerre Polynomials.

The X_m exceptional orthogonal polynomials (XOP) form a complete set of eigenpolynomials to a differential equation. Despite being complete, the XOP set does not contain polynomials of every degree. Thereby, the XOP escape the Bochner classification theorem.

In literature two ways to obtain XOP have been presented. When $m = 1$, Gram–Schmidt orthogonalization of a so-called “flag” was used. For general m , the Darboux transform was applied.

Here, we present a possible flag for the X_m exceptional Laguerre polynomials. There is a large degree of freedom in doing so. Further, we derive determinantal representations of the X_2 exceptional Laguerre polynomials involving certain adjusted moments of the exceptional weights. We find a recursion formula for these adjusted moments. The particular canonical flag we pick keeps both the determinantal representation and the moment recursion manageable. (Received September 26, 2017)