1145-11-567 **Lin Jiu***, Department of Mathematics & Statistics, Dalhousie University, 6316 Coburg Road, Halifax, NS B3H 4R2, Canada, and **Diane Shi**, School of Mathematics, Tianjin University, No.135 Yaguan Road, Tianjin, 300350, Peoples Rep of China. *Matrix Representation for Higher-Order Euler Polynomials.*

We study the Euler polynomials of order p, which are denoted by $E_n^{(p)}(x)$. Define a doubly infinite band matrix

$$RE^{(p)} := \begin{pmatrix} x-\frac{p}{2} & -\frac{p}{4} & 0 & 0 & \cdots & 0 & \cdots \\ 1 & x-\frac{p}{2} & -\frac{p+1}{2} & 0 & \cdots & 0 & \cdots \\ 0 & 1 & x-\frac{p}{2} & \ddots & \ddots & \vdots & \cdots \\ 0 & 0 & 1 & \ddots & -\frac{n(n+p-1)}{4} & 0 & \cdots \\ \vdots & \vdots & \vdots & \ddots & x-\frac{p}{2} & -\frac{(n+1)(n+p)}{4} & \cdots \\ 0 & 0 & 0 & \ddots & 1 & \ddots & \ddots \\ \vdots & \vdots & \vdots & \cdots & \vdots & \ddots & \ddots \end{pmatrix}.$$

Then, the left upper $m \times m$ block of $RE^{(p)}$ generates all $E_n^{(p)}(x)$ through its powers, for $n \leq m$.

To obtain this matrix representation, the key theorem is to connect the moments of a random variable and the generalized Motzkin numbers, through the same J-fractions. Since recent result recognize $E_n^{(p)}(x)$ as moments of certain random variable, by the key theorem, we can view them also as generalized Motzkin numbers. Then, the matrix representation follows naturally from the lattice path interpretation.

Analogue for the Bernoulli polynomials, $B_n(x)$, is also obtained. (Received September 10, 2018)