

1176-33-331

Philip Feinsilver* (phfeins@siu.edu), 2107 W Sunset Dr, Carbondale, IL 62901. *Canonical Polynomial Sequences: Inverse Pairs.*

For $V(z)$, analytic in a neighborhood of $0 \in \mathbb{C}$, $V(0) = 0$, $V'(0) \neq 0$, there is an associated sequence of polynomials, *canonical polynomials*, that is a generalized Appell sequence with lowering operator $V(d/dx)$. Correspondingly, the inverse function $Z(v)$ has an associated canonical polynomial sequence. The coefficients of the two sequences form two mutually inverse infinite matrices. We detail the operator calculus for the pair of systems, illustrating the duality of operators and variables between them. Examples are presented including a connection between Gegenbauer and Bessel polynomials. Touchard polynomials appear as well. Alternative settings would include an umbral calculus approach as well as the Riordan group. Here we use the approach through operator calculus. (Received January 25, 2022)