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Daniel Joseph Galiffa* (djg34@psu.edu), Penn State Erie, The Behrend College, 4701 College Drive, Erie, PA 16563. *q-Orthogonal Polynomial Solutions to a Class of Differential-Difference Equations*. Preliminary report.

In this talk, we first briefly address how orthogonal polynomial solutions have been extracted from the differential-difference equation $\pi(x)DP_n(x) = (\alpha_n x + \beta_n)P_n(x) + \gamma_n P_{n-1}(x)$, where $\pi(x)$ is a polynomial of degree at most 2, with respect to the operators $D = d/dx$ and $D = D_q$. From there, we discuss the novel research conducted on this equation. Namely, we demonstrate how orthogonal polynomial solutions were obtained with respect to the operator $D = D_{q^{-1}}$. Among these solutions were the well-known and fully classified Al-Salam Carlitz II, discrete q -Hermite II, q -Laguerre and Stieltjes-Wigert polynomials. In addition, orthogonal polynomial solutions were obtained that, as far as we know, have not been fully characterized and require further analysis. (Received September 12, 2010)