1016-33-251 **Włodzimierz Bryc**, Department of Mathematical Sciences, University of Cincinnati, Cincinnati, OH, and **Mourad E. H. Ismail*** (ismail@math.ucf.edu), Department of Mathematics, University of Central Florida, Orlando, FL. *Approximation Operators, Exponential, and Free Exponential Families.* Preliminary report.

Using the technique developed in approximation theory, we construct examples of exponential families of infinitely divisible laws which can be viewed as s-deformations of the normal, gamma, and Poisson exponential families. Replacing the differential equation of approximation theory by a q-differential equation, we define the q-exponential families, and we identify all q-exponential families with quadratic variance functions when $|q| < 1$. We elaborate on the case of $q = 0$ which is related to free convolution of measures. We conclude by considering briefly the case $q > 1$, and other related generalizations. (Received February 13, 2006)