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**Alexandra V Pasi\*** (lexipasi@gmail.com) and **Richard Wellman**. *Gaussian Left-Definite Variations of the Laguerre and Jacobi Differential Expressions and Their Applications to Learning Theory*.

We present the Gaussian left-definite variations of the Laguerre and Jacobi differential expressions. Unlike other left-definite variations of classical differential equations that have been previously studied, the expressions we present are of different orders than the original self-adjoint operators they are similar to. Additionally, while both the Laguerre and Jacobi differential expressions are singular, their Gaussian left-definite variations are regular. The computability of these regular expressions makes them especially well-suited for applications to learning theory. We discuss how these expressions may be used in the creation of novel kernels for learning machines. (Received September 17, 2013)