1072-47-51 **Ronald G. Douglas*** (rdouglas@math.tamu.edu), Department of Mathematics, Texas A&M University, TAMU-3368, College Station, TX 77843-3368, and **Kai Wang** (kaiwangmath@gmail.com), Department of Mathematics, Texas A&M University, TAMU-3368, College Station, TX 77843-3368. *Polynomially Weighted Spaces on the Unit Ball in C^n.*

For any probability measure μ on the unit ball in C^n, one can attempt to define a Bergman space which is a subspace of the L^2 space for μ. However, there are several possible definitions for such a space. One would be all functions in $L^2(\mu)$ which are locally equal a.e. to a holomorphic function. A second would be the equivalence classes in $L^2(\mu)$ which contain a holomorphic function on the open ball. Another would be the closure in $L^2(\mu)$ of the polynomials or perhaps the functions holomorphic on a neighborhood of the closure of the ball.

In this talk I discuss a recent result by K. Wang and myself showing that all of these definitions coincide for the measures of the form $d(\mu) = |p|^2 dm$, where m is Lebesgue measure on the ball and p is a polynomial. Moreover, in these cases, the Hilbert module defined by this weighted Bergman space is essentially normal; that is, all of the cross-commutators of the multiplication operators defined by the coordinate functions are compact (actually in the Schatten-von Neumann class). The proofs depend on techniques from harmonic analysis. (Received June 13, 2011)