1072-47-72 **Quanlei Fang** and **Jingbo Xia*** (jxia@acsu.buffalo.edu), Department of Mathematics, State University of New York at Buffalo, Buffalo, NY 14260. *Weights and essential normality of polynomial-generated submodule.*

Recently, Douglas and Wang proved that for each polynomial q, the submodule $[q]$ of the Bergman module on the ball generated by q is essentially normal. Using improved techniques, we show that the analogue of this result holds in the case of the Hardy space $H^2(S)$ and in the first non-trivial Drury-Arveson space case H^2_2, and more. More specifically, we consider the family of reproducing-kernel Hilbert spaces $\mathcal{H}^{(t)}$, $-n \leq t < \infty$, where n is the complex dimension of the ball. Here, $\mathcal{H}^{(t)}$ is defined by the reproducing kernel $(1 - \langle \zeta, z \rangle)^{-n-1-t}$, and one can think of the value t as the "weight" for the space $\mathcal{H}^{(t)}$. We show that if $q \in \mathbf{C}[z_1, \ldots, z_n]$, then for each real value $-3 < t < \infty$ the submodule $[q]^{(t)}$ of $\mathcal{H}^{(t)}$ is p-essentially normal for every $p > n$. Applications of this general result to the cases $t = -1$ and $t = -2$ yield the above-mentioned results for $H^2(S)$ and H^2_2 respectively. (Received June 17, 2011)