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Department of Mathematics

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Operator-Theoretical Considerations on Weighted Symmetric Fock Spaces - Part II

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We obtain all Dirichlet spaces of holomorphic functions on the unit ball of \mathbb{C}^N as weighted symmetric Fock spaces over \mathbb{C}^N , which are infinite direct sums of weighted tensor products of \mathcal{C}^N . These are reproducing kernel Hilbert spaces on the unit ball with binomial or hypergeometric kernels, and they include weighted Bergman, Hardy, Arveson, and Dirichlet spaces as special cases. We consider some operator-theoretic problems related to the shift operators on these spaces.

We obtain von Neumann inequalities with respect to all Dirichlet spaces, which give upper bounds on the norms of polynomials of row contractions on arbitrary Hilbert spaces. We prove that the C^* -algebras generated by the shift operators on these spaces, the Toeplitz algebras, fit in exact sequences that are in the same Ext class, which allows us to compute the K -theory groups K_0 and K_1 of the Toeplitz algebras. Several other results related to subnormality or Fredholm properties of the shift operators can be presented if time permits. Radial differential and other simple diagonal operators are prominent throughout.