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Abstract

This paper deals with geometric properties of sequences of reproducing kernels related to the de-Branges spaces. If b is a nonconstant function in the unit ball of H^∞, and T_b is the Toeplitz operator, with symbol b, then the de-Branges space, $\mathcal{H}(b)$, associated to b, is defined by $\mathcal{H}(b) = (Id - T_b T_{\overline{b}})H^2$, where H^2 is the Hardy space of the unit disk. It is equiped with the inner product such that $Id - T_b T_{\overline{b}}$ is a partial isometry from H^2 onto $\mathcal{H}(b)$. First, following a work of Ahern-Clark, we study the problem of orthonormal basis of reproducing kernels in $\mathcal{H}(b)$. Then we give a criterion of sequences of reproducing kernels which form an unconditionnal basis in their closed linear span. As far as concerns the problem of complete unconditionnal basis in $\mathcal{H}(b)$, we show that there is a dichotomy between the case where b is an extreme point of the unit ball of H^∞ and the opposite case.