

**Meeting:** 999, Nashville, Tennessee, SS 7A, Special Session on Operator Theory on Function Spaces

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**A. Aleman** and **S. Richter\*** ([richter@math.utk.edu](mailto:richter@math.utk.edu)), Department of Mathematics, University of Tennessee, Knoxville, TN 37996, and **C. Sundberg**. *Invariant subspaces for the backward shift on Hilbert spaces of analytic functions with regular norm.*

Let  $\mathbb{D}$  denote the open unit disc and let  $\zeta$  denote the identity function on  $\mathbb{D}$ . We investigate the structure of invariant subspaces of the backward shift operator  $Lf = (f - f(0))/\zeta$  on a large class of Hilbert spaces of analytic functions on  $\mathbb{D}$ , where the forward shift operator  $M_\zeta f = \zeta f$  acts as a contraction. It is known that for the Hardy- and for the weighted Bergmanspaces with standard weights every nontrivial  $L$ -invariant subspace  $\mathcal{M}$  is contained in the Nevanlinna class and every function in  $\mathcal{M}$  has a pseudocontinuation in the Nevanlinna class of the exterior disc.

However, it follows from results of J. Esterle that there are Hilbert spaces of analytic functions on  $\mathbb{D}$  such that  $M_\zeta$  is a contractive weighted shift operator and such that there are nontrivial  $L$ -invariant subspaces with functions that do not have pseudocontinuations.

We formulate certain regularity conditions on the norm of the Hilbert space and then show that these imply the above mentioned pseudocontinuation property of functions in all nontrivial  $L$ -invariant subspaces. For weighted shift operators these conditions are made explicit in terms of the weights. (Received August 24, 2004)