1011-47-154 **Xiang Fang*** (xfang@math.ksu.edu), Mathematics Department, Manhattan, KS 66502. *An additive formula for invariant subspaces and their complements.*

By "additive" we mean the following property which we think to be reasonable to ask when we seek to measure the size, or the multiplicity, of subspaces of a Hilbert space: with respect to certain operators, the measure defined on an invariant subspace and the measure on its orthogonal complement (or, the coinvariant subspace) naturally add up to an obvious number, which measures the multiplicity of the ambient Hilbert space.

Our main result is: for multiplication invariant subspaces of a Hilbert space of (vector-valued) holomorphic functions over a domain, the fibre dimension of an invariant subspace, an analytic notion, and the Samuel multiplicity of the corresponding coinvariant subspace, an algebraic notion, always add up.

A special case of the above result was first discovered over the symmetric Fock space, and played a key role to show that Arveson's curvature invariant is always equal to the Samuel multiplicity for any pure d-contraction with finite rank. But the arguments there involves properties of Nevanlinna-Pick kernels. Now we are able to get around the NP arguments, and show that a formula of independent interest holds for general Hilbert spaces of holomorphic functions. (Received August 23, 2005)