ABSTRACT

Weighted shifts have been studied extensively in the past few decades. Shifts, including both unilateral and bilateral ones, are a basic tool in operator theory. They have many interesting properties, both analytic and algebraic. The unilateral shift is not just an isometry, but it is a fundamental building block out of which all isometries are constructed. In our work, we have studied weighted unilateral shifts of higher multiplicity with operator weights. We consider a class $\mathcal{T}$ consisting of operators on a Hilbert space K. Each element of $\mathcal{T}$ has the property that its matrix representation with respect to a fixed basis of K has exactly one entry in each row and each column. As such the elements of $\mathcal{T}$ need not necessarily commute or be self adjoint. We consider an operator weighted unilateral shift S whose weights are from the class $\mathcal{T}$, and then determine the reducing and minimal reducing subspaces of S. We also propose the definition of an operator weighted pseudo shift and using this we study the minimal reducing subspaces of a direct sum (finite or countable) of operator weighted shifts.