165.   On Class (BD) Operators of order (n+k+m)

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Abstract

In this paper, we introduce the class of (BD) of order (n+k+m) operators acting on the classical Hilbert space H. This new class of operators contribute to solving solving differential equations ,studying spectral properties and analyzing linear transformations in function spaces .An operator if T $\in$ B(H) is said to belong to class (BD) of order (n+k+ m) if T *2(n+k+m) (TD)2 commutes with (T *(n+k+m)TD)2 equivalently [T *2(n+k+m) (TD)2, (T *(n+k+m)TD)2] = 0. We investigate the properties of this class and we also analyze the relation of this class to (n+k+m)-power D-operator. The methodology involved the use of adjoint properties of these operators which majorly relies on the commutation relation. Results show that the product of two doubly commuting operators is in the class of (BD) order (n+k+m) operators. This study is limited in the classical Hilbert space and we therefore encourage exploration in the semi-Hilbertian space .

Keywords: *D-operator, Normal, N Quasi D-operator, complex symmetric operators, n-power D-operator, (BD) operators*