ON REDUCIBILITY IN BANACH SPACES AND BANACH LATTICES

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In this talk we are interested in reducıblılıty and decomposability of a collection of non zero (positive) operators on a Banach (lattice) space. Let X be a Banach (lattice) space and L(X) be the collection of all bounded linear operators on X.A closed invariant order ideal(or subspace) is a closed ideal (or subspace) that is taken into itself by the given operator. A subset Ω of L(X) is called decomposable (or reducible) if there exists a non trivial closed order ideal(or subspace) that is invariant for all operators in Ω, otherwise Ω is called indecomposable(or irreducible). The positive commutant of a positive operator T on a Banach lattice X is the collection of all positive operators on X which commutes with T and is denoted by $\{\mathrm{T}\}_+^c$. Here is the examples of some results in this talk.

Proposition 1. *If $K \in L(X)$ is a Lomonosov operator, then K and the continuous adjoint K' of K are compressionally reducible.*

Theorem 1. *If $T \in L(X)$ is a non zero positive quasinilpotent operator and if there exists a non zero operator $S \in \{T\}_+^c$ that dominates a non zero AM-compact operator $K \in L(X)$, then $\{S, T\}$ is compressionally decomposable.*

Theorem 2. *Suppose $\Omega \subseteq L(X)$, $T \in \Omega$ is a non zero positive quasinilpotent operator. The following assertions are ture.*

(i) If T is compact- friendly and dominates all elements of Ω, then Ω is compressionally decomposable.

(ii) If the commutant of T dominates a non zero AM-compact operator and T dominates all elements of Ω , then Ω is compressionally decomposable.

(iii) If T is a Dunford-Pettis operator and T dominates all elements of Ω , then Ω is compressionally decomposable.

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