

Partial orders in Rickart rings defined by annihilators

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Abstract. A matrix A^- is a generalized inverse (g -inverse) of a matrix A if $AA^-A = A$ holds. If A and B are two matrices of the same order then we say that A is below B under the minus partial order, $A <^- B$, if $AA^- = BA^-$ and $A^-A = A^-B$ for some g -inverse A^- of matrix A , [3]. If we use some specific generalized inverses in this definition then we can define specific partial orders such as star, sharp, core and other partial orders. Let H be an infinite-dimensional Hilbert space and $B(H)$ the algebra of all bounded linear operators on H . Although the minus and other orders can be extended to $B(H)$ via g -inverses, this is not the best approach because only the operators with closed range have a generalized inverse. The minus partial order can be successfully extended to $B(H)$ using the projections, [6], [5]. In this talk we will discuss a possible way of algebraization of this approach using the annihilators. Our extensions of minus, star, sharp and core partial orders become partial order relations in the case of Rickart and Rickart star rings, [1], [2], [4].

Keywords: generalized inverse; partial orders; Rickart ring.

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