

İSTANBUL ANALYSIS SEMINARS

MULTIDIMENSIONAL SPECTRAL ORDER

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Abstract: Spectral order was introduced by M. P. Olson in 1971 for bounded selfadjoint operators. The motivation to consider a new order was the fact that the set of all selfadjoint bounded operators with usual order given by quadratic forms is not lattice ordered. As shown by Kadison, the set \mathcal{S} of all bounded selfadjoint operators on a complex Hilbert space \mathcal{H} is an anti-lattice. A little bit earlier, Sherman proved that a C^* -algebra \mathcal{A} of bounded linear operators on \mathcal{H} is commutative provided that the set of all selfadjoint elements of \mathcal{A} is lattice ordered by " \leq ". Olson showed by himself that the set of all selfadjoint elements of a von Neumann algebra of bounded linear operators on \mathcal{H} is a conditionally complete lattice with respect to the spectral order.

In my talk I will present the spectral order in the case of unbounded selfadjoint operators and n -tuples of commuting unbounded selfadjoint operators. I will discuss especially classes of functions which preserve the spectral order and give connections between spectral order and usual order for selfadjoint operators.

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