SPECIAL OPERATOR CLASSES AND THEIR PROPERTIES

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ABSTRACT. We introduce some special operator classes and study in terms of Berezin symbols their properties. In particular, we give some characterizations of compact operators and Schatten-von Neumann class operators in terms of Berezin symbols. We also consider some classes of compact operators on a Hilbert space H, which are generalizations of the well known Schatten-von Neumann classes of compact operators. Namely, for any number p, $0 < p < \infty$, and the sequence $w := (w_n)_{n \geq 0}$ of complex numbers w_n, $n \geq 0$, we define the following classes of compact operators on H:

$$S_p^w(H) = \left\{ K \in S_\infty(H) : \sum_{n=0}^{\infty} (s_n(K))^p w_n^p \text{ is convergent series} \right\},$$

where $s_n(K)$ denotes the nth singular number of the operator K. The characterizations of these classes are given in terms of Berezin symbols.

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