ICM 1998, Berlin, Aug. 18–27

Abstracts of Short Communications and Posters

Section:

8. Analysis

1991 MS Classification: 46, 47

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Lifting approximation properties and ideals of compact and approximable operators

We characterize intrinsically a general class of shrinking approximations of the identity. We also show that the existence of these approximations of the identity is separably determined. As an application, we study certain class of ideals of compact or approximable operators, including M-, u-, and h-ideals. We prove e. g. that the approximable operators $\mathcal{A}(X)$ on a Banach space X form an M-ideal in the Banach space $\mathcal{L}(X)$ of all bounded linear operators if and only if every separable closed subspace of X is contained in a separable closed subspace Y for which $\mathcal{A}(Y)$ is an M-ideal in $\mathcal{L}(Y)$ (cf. [1] for related results).

Reference: [1] E. Oja, M-ideals of compact operators are separably determined, *Proc. Amer. Math. Soc.* (to appear).