

THE $\mathcal{K}_{\mathcal{A}}$ AND THE $\mathcal{K}_{\mathcal{A}}$ -UNIFORM APPROXIMATION PROPERTY

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In 1984, Carl and Stephani defined, for a fixed Banach operator ideal \mathcal{A} , the notion of \mathcal{A} -compact sets and the operator ideal of \mathcal{A} -compact operators, denoted by $\mathcal{K}_{\mathcal{A}}$. We use the Carl and Stephani theory to inspect two types of approximation properties. The first is rather standard. We say that a Banach space E has the $\mathcal{K}_{\mathcal{A}}$ -uniform approximation property if the identity map is uniformly approximated by finite rank operators on \mathcal{A} -compact sets. For the second one, we introduce a way to measure the size of \mathcal{A} -compact sets and use it to give a norm to $\mathcal{K}_{\mathcal{A}}$. The geometric results obtained for $\mathcal{K}_{\mathcal{A}}$ are applied to give different characterizations of the $\mathcal{K}_{\mathcal{A}}$ -approximation property, defined by Oja and the authors independently. This approach allows us to undertake the study of both approximation properties in tandem. In particular, when $\mathcal{A} = \mathcal{N}^p$ the ideal of right p -nuclear operators, we cover the p -approximation property and the κ_p -approximation property, which were studied in the past 10 years by several authors.

The results of this talk are contained in a joint work with S. Lassalle, [1].

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REFERENCES

- [1] S. Lassalle, P. Turco, *The Banach ideal of \mathcal{A} -compact operators and related approximation properties*, J. Funct. Anal (2013) <http://dx.doi.org/10.1016/j.jfa.2013.07.001>

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