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How accessible are categories of algebras? (English) Zbl 1023.18001

The aim of the paper is to study properties of the category $\text{Alg}F$ of $F$-algebras for a given endofunctor $F : A \to A$. More precisely, let $\lambda$ be a regular cardinal and $\lambda^+$ its successor. An endofunctor $F : A \to A$ is called $\lambda$-accessible (resp. strongly $\lambda$-accessible) provided that the category $A$ is $\lambda$-accessible and $F$ preserves $\lambda$-filtered colimits (resp. and $\lambda$-presentable objects). The following results are proved: if $A$ is locally $\lambda$-multipresentable and $F$ is $\lambda$-accessible, then $\text{Alg}F$ is locally $\lambda$-multipresentable; if $F$ is strongly $\lambda$-accessible, then $\text{Alg}F$ is $\lambda^+$-accessible. Several examples and counterexamples are given.

Reviewer: Y. Diers (Faches-Thumesnil)

MSC:
18A05 Definitions and generalizations in theory of categories
18D99 Categorical structures
18A22 Special properties of functors (faithful, full, etc.)

Keywords:
algebra for endofunctor; accessible category; accessible functor; regular cardinal

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References:

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