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Special precovered categories of Gorenstein categories. (English) Zbl 1423.18052

Summary: Let $A$ be an abelian category and $P(A)$ be the subcategory of $A$ consisting of projective objects. Let $C$ be a full, additive and self-orthogonal subcategory of $A$ with $P(A)$ a generator, and let $G(C)$ be the Gorenstein subcategory of $A$. Then the right 1-orthogonal category $G(L)^{1+}$ of $G(C)$ is both projectively resolving and injectively coresolving in $A$. We also get that the subcategory $SPC(G(C))$ of $A$ consisting of objects admitting special $G(C)$-precovers is closed under extensions and $C$-stable direct summands (*). Furthermore, if $C$ is a generator for $G(L)^{1+}$, then we have that $SPC(G(C))$ is the minimal subcategory of $A$ containing $G(L)^{1+} \cup G(C)$ with respect to the property (*), and that $SPC(G(C))$ is $C$-resolving in $A$ with a $C$-proper generator $C$.

MSC:
18G25 Relative homological algebra, projective classes (category-theoretic aspects)
18E10 Abelian categories, Grothendieck categories

Keywords:
Gorenstein categories; right 1-orthogonal categories; special precovers; special precovered Gorenstein categories; projectively resolving; injectively coresolving

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References:

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