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Homological invariants related to semidualizing bimodules. (English) Zbl 1446.16002

Summary: Let $R$ and $S$ be rings and $RC_S$ a semidualizing bimodule. We show that the supremum of the $C$-projective dimensions of $C$-flat left $R$-modules is less than or equal to that for left $R$-modules with finite $C$-projective dimension, and the latter is less than or equal to the supremum of the $C$-injective dimensions of projective (or flat) left $S$-modules. We also show that the supremum of the $C$-projective dimensions of injective left $R$-modules and that of the $C$-injective dimensions of projective left $S$-modules are identical provided that both of them are finite. Finally, we show that the supremum of the $C$-projective dimensions of $C$-flat left $R$-modules (a relative homological invariant) and that of the projective dimensions of flat left $S$-modules (an absolute homological invariant) coincide.

MSC:
16D20 Bimodules in associative algebras
16E10 Homological dimension in associative algebras
18G25 Relative homological algebra, projective classes (category-theoretic aspects)

Keywords:
semidualizing bimodules; $C$-projective dimension; $C$-injective dimension; $C$-flat dimension; relative homological invariants

Full Text: DOI

References:


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