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## A generalized relative injectivity for extending modules

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An open problem in the theory of extending modules is finding necessary and sufficient conditions for a class of extending modules inherit this property.

A module  $M$  is called extending (or CS) if every submodule of  $M$  is essential in a direct summand of  $M$ . This concept can be viewed as a generalization of either the concept of injective modules (where we use the fact that modules are essential in their injective hull) or that of semisimple modules (where all submodules are direct summands).

In the literature, partial results for this open problem have been given. Several authors have used the usual relative injectivity, as well as weaker versions of relative injectivity in order to obtain a sufficient condition. In my talk I will present a generalized relative injectivity, which is a necessary condition. Applications will also be presented.