EXTENDING AND LIFTING TYPE MODULES

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Abstract. An extending (or CS) module is defined as a module with the property that every submodule is essential in a direct summand. To some extent, its dual notion is that of lifting module, which is a module M with the property that every submodule N of M contains a direct summand K of M such that N/K is superfluous in M/K. They have been intensively studied throughout the last two decades, and a number of generalizations have been given. We consider extending and lifting modules with respect to a proper class of short exact sequences of modules, give properties of such relative Σ-extending and Σ-lifting modules, and discuss some connections with approximations of modules and natural classes of modules.

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