From Exact Sequences to Modules Embedded in Flat Modules

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ABSTRACT

INTRODUCTION

Exact sequences play a basic role in several branches of Mathematics particularly, in Topology and Algebra. For example in case of ring modules, exact sequences are vastly used for a unified study of submodules and quotient modules utilizing the respective homomorphisms. They provide a visualization of the process of proving the propositions and statements. Many classes of modules can be defined and characterized using exact sequences. In many cases it is possible to get simplified proofs which appear comprehensive because of the resemblance of sequences of modules and their homomorphism with graphs. In this study after reviewing a brief history of exact sequences, their role in the study of the classes Fr, P, F and TF of free, Projective, Flat and torsion free modules will be discussed. Then the exact sequences will be used to study a generalization of modules belonging to the class TF by the modules belonging to the class EF of modules embeddable in a flat module.

Keywords: Exact Sequences, E. F. Modules, Homological Algebra.