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AN INVESTIGATION OF $\mathfrak{F}$-CLOSURE OF INTUITIONISTIC FUZZY SUBMODULES OF A MODULE

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Abstract: In this paper, we introduce the notion of $\mathfrak{F}$-closure of intuitionistic fuzzy submodules of a module M. Our attempt is to investigate various characteristics of such an $\mathfrak{F}$-closure. If $\mathfrak{F}$ is a non-empty set of intuitionistic fuzzy ideals of a commutative ring R and A is an intuitionistic fuzzy submodule of M, then the $\mathfrak{F}$-closure of A is denoted by $Cl^M_{\mathfrak{F}}(A)$. If $\mathfrak{F}$ is weak closed under intersection, then (1) $\mathfrak{F}$-closure of A exhibits the submodule character, and (2) the intersection of $\mathfrak{F}$-closure of two intuitionistic fuzzy submodules equals the $\mathfrak{F}$-closure of intersection of the intuitionistic fuzzy submodules. If $\mathfrak{F}$ is weak closed under intersection, then the submodule property of $\mathfrak{F}$-closure implies that $\mathfrak{F}$ is closed. Moreover, if $\mathfrak{F}$ is inductive, then $\mathfrak{F}$ is a topological filter if and only if $Cl^M_{\mathfrak{F}}(A)$ is an intuitionistic fuzzy submodule for any intuitionistic fuzzy submodule A of M.

Keywords and Phrases: Intuitionistic fuzzy ideals(submodules), $\mathfrak{F}$-closure, $\mathfrak{F}$-torsion, $\mathfrak{F}$-closed, topological filter.

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1. Introduction

In several branches of mathematics, closure operators have been extremely important. The closure operators T-closed and T-honest, which have been researched by Fay and Joubert [7], are two examples of the various closure operators that can be used for categories of modules. When studying different facets of rings and