

Lattice theory and module theory

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Our aim in this talk is twofold. First we study decomposition of lattices and the consequences in the module theory. It is well known that if a ring R has a ring decomposition, the lattice of right ideals is a direct product of two module lattices. We study what happens whenever the lattice of a right R -module has such a decomposition, and apply it in different contexts. For the second approach let us consider a poset P , the preadditive category \mathcal{P} , and the well known functor category $\text{Mod-}\mathcal{P}$. Working in $\text{Mod-}\mathcal{P}$ we build a hereditary torsion theory, and a class of modules that parameterizes the category of fuzzy modules over a given ring, and provide a well founded algebraic approach.