World Academy of Science, Engineering and Technology
International Journal of Mathematical and Computational Sciences
Vol:13, No:05, 2019

Second Representation of Modules over Commutative Rings

Authors : Jawad Abuhlail, Hamza Hroub

Abstract : Let R be a commutative ring. Representation theory studies the representation of R-modules as (possibly finite) sums of special types of R-submodules. Here we are interested in a class of R-modules between the class of semisimple R-modules and the class of R-modules that can be written as (possibly finite) sums of secondary R-submodules (we know that every simple R-submodule is secondary). We investigate R-modules which can be written as (possibly finite) sums of second R-submodules (we call those modules second representable). Moreover, we investigate the class of (main) second attached prime ideals related to a module with such representation. We provide sufficient conditions for an R-module M to get a (minimal) second representation. We also found the collection of second attached prime ideals for some types of second representable R-modules, in particular within the class of injective R-modules. As we know that every simple R-submodule is second and every second R-submodule is secondary, we can see the importance of the second representable R-module.

Keywords : lifting modules, second attached prime ideals, second representations, secondary representations, semisimple modules, second submodules
Conference Title : ICMCDMA 2019 : International Conference on Mathematics, Computation Dynamics and Mathematical Analysis
Conference Location : Vancouver, Canada
Conference Dates : May 20-21, 2019

Open Science Index, Mathematical and Computational Sciences Vol:13, No:05, 2019 publications.waset.org/abstracts/99517.pdf