Thesis Seminar

Speaker

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Rings Whose Cyclics Have a Certain Property

Abstract:

In the first part of this talk, we will present some studies on rings whose cyclic modules are C3-modules (resp., D3-modules). A module is called a C3-module if the sum of any two direct summands with zero intersection is again a direct summand. We prove a structure theorem of semiperfect right CC3-rings, i.e., rings whose cyclics are C3-modules. The structure of right self-injective regular CC3-rings is also obtained. As a dual notion of C3-modules, a module M is called a D3-module if the intersection of any two direct summands of M whose sum is M is a direct summand of M. We have a structure theorem of right self-injective regular CD3-rings, i.e., rings whose cyclics are D3-modules. We completely characterize the rings whose cyclic modules are quasi-discrete and, respectively, discrete.

In the second part, we consider rings whose cyclic modules are lifting. Lifting modules are the dual notion of extending modules. Rings whose cyclic modules are extending have been extensively studied in the literature. We show that if every cyclic right R-module is lifting, then every cyclic right R-module is a direct sum of local modules. Furthermore, we prove that artinian serial rings are exactly these rings for which every left and right module is a direct sum of local modules. A new characterization of artinian serial rings with Jacobson radical square zero is also obtained.