Colloquium talk

Time	2:00-3:00 PM, September 23, Friday
Room	HH-3017
Title	The Hopkins-Levitzki Theorem: old and new (I)
Speaker	Professor Toma Albu, Simion Stoilow Institute of Mathematics of the Romanian Academy, Romania

Abstract

The Classical Hopkins-Levitzki Theorem, discovered independently in 1939 by C. Hopkins and J. Levitzki states that any right Artinian ring with identity is right Noetherian, or equivalently, it can be reformulated as:

Classical H-L : Let R be a right Artinian ring with identity. Then any Artinian right R-module is Noetherian.

In the last fifty years, especially in the 1970's, 1980's, and 1990's it has been generalized as follows:

Relative H-L : Let R be a ring with identity, and let τ be a hereditary torsion theory on Mod-R. If R is τ-Artinian, then any τ-Artinian right R-module is τ-Noetherian.

Absolute H-L : Let G be a Grothendieck category having an Artinian generator. Then any Artinian object of G is Noetherian.

Latticial H-L : Let L be an arbitrary modular Artinian lattice with 0 and 1. Then L is Noetherian if and only if L satisfies two conditions, one of which guarantees that L has a good supply of essential elements and the second one ensures that there is a bound for the composition lengths of certain intervals of L.

The aim of this talk is to explain to a general audience all these aspects of the Classical Hopkins-Levitzki Theorem, their dual formulations, the connections between them, their applications to the investigation of the structure of some relevant classes of modules including injectives and projectives, as well as to present other newer aspects of it involving the concepts of Krull and dual Krull dimension.