

Radicals in Groups with a descending chain condition on subgroups

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Groups in which there is no infinite strictly descending chain of centralizer, so called Mc-groups, have been studied by Bryant and Hartley in the late 70's. Of special interest in this context are nilpotent and solvable subgroups and their corresponding radicals: The Fitting subgroup (the group generated by all normal nilpotent subgroups) and the solvable radical (the group generated by all normal solvable subgroups). Note that these are not necessarily nilpotent or solvable respectively. There is a strong connection between Mc-groups and model theory: Any stable group is an Mc-group. Indeed, in stable groups there is no strictly descending chain of any uniformly definable subgroups. Relaxing our constraints and moving to groups with merely a simple theory, one has to ask each subgroup in the chain to be of infinite index. If we relax our condition in the orthogonal direction and look at NIP groups, we obtain a chain condition for finite sets of parameters.

In this talk we will give an overview on the results known for the existence or non-existence of the above mentioned radicals in groups with descending chains on definable subgroups or merely centralizers.

This is joint work with Ulla Karhumäki.