

SEMINARIO IMAC

Estructuras Algebraicas y Teoría de Códigos Correctores de Errores



Conferencia a cargo de Quinhai Zhang *University of Linfen, People's Republic of China*

How are A_3 -groups classified?

Abstract

A group of Prime Power Order is called a p -group, where p is a prime. A group G is called a minimal nonabelian if all proper subgroups of G are abelian but G is nonabelian. As numerous results show, the structure of a finite p -group depends essentially on its minimal nonabelian subgroups. Z. Janko and Y. Berkovich introduced a more general concept than that of a minimal nonabelian p -group, that is, A_t -groups. Given a positive integer t , a nonabelian p -group G is said to be an A_t -group if it has a nonabelian subgroup of index p^{t-1} but all its subgroups of index p^t are abelian. Obviously, any finite p -group must be an A_t -group for some non-negative integer t . In particular, A_1 -groups are minimal nonabelian.

A_1 -groups were classified by L. Rédei in 1947. A_2 -groups were also studied and classified by Seriev, Kazarin, Draganyuk, Berkovich and Janko, Zhang and et al., respectively.

Classifying A_3 -groups is called a "Old problem" in the book of "Groups of Prime Power Order Vol.2" by Z. Janko and Y. Berkovich in 2008. My graduate students and me classified A_3 -groups up to isomorphism. This problem is completely solved.

In this talk, we will introduce how are A_3 -groups classified? Some new results, which are discovered and proved by using the classification of A_3 -groups, will be also introduced.

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