

ЮБИЛЕЙНА НАУЧНА СЕСИЯ – 30 години ФМИ  
ПУ “Паисий Хилендарски”, Пловдив, 3-4.11.2000

## CONTROLLING SUBGROUPS FOR IDEALS OF CROSSED PRODUCTS

**Stoil Vasilev Mihovski**

Let  $K * G$  be a crossed product of the group  $G$  over the  $F$ -algebra  $K$  and let  $F$  be a  $G$ -invariant subfield of  $K$  with characteristic  $p \geq 0$ . Then  $G(F) = \{g \in G \mid \alpha^{g\sigma} = \alpha \text{ for all } \alpha \in F\}$  is a normal subgroup of  $G$  and  $I = (I \cap K * G(F))K * G$  for every ideal  $I$  of  $K * G$ . Let  $H$  be a normal subgroup of  $G(F)$  such that  $G(F)/H$  is a solvable group. If all factors of the commutator series of  $G(F)/H$  have no  $p$ -elements when  $p > 0$ , then  $J(K * G) \subseteq J(K * H)K * G$ , where  $J(K * G)$  is the radical of Jacobson. Moreover, if  $K$  is a semiprimitive  $F$ -algebra and  $G(F)$  is a locally nilpotent group without  $p$ -elements in case  $p > 0$ , then  $K * G$  is semiprimitive.

Department of Mathematics  
University of Plovdiv, 24 Tzar Assen Str.,  
4000 Plovdiv, Bulgaria

## INVARIANTS AND MULTIPLICATIVE GROUPS OF COMMUTATIVE GROUP ALGEBRAS

**Todor Zh. Mollov**

The basic directions of the theory of the group algebras are the following:

- 1) the isomorphism problem;
- 2) a description of the multiplicative group of the group algebras;
- 3) ring-theoretic properties of the group algebras and
- 4) radicals of the group algebras.

This report is a survey of the basic results of the directions 1) and 2) for commutative group algebras.

Department of Algebra,  
University of Plovdiv, 24 Tzar Assen Str.,  
4000 Plovdiv, Bulgaria  
e-mail: mollov@pu.acad.bg