Izvleček

Bodi G končna grupa in K polje s karakteristiko $p > 0$. Cilj naloge je najti potrebne in zadostne pogoje za polenostavnost križnega produkta $K_\tau^\alpha G$.

Na začetku je zapisana teorija, ki je potrebna za razumevanje snovi. Dokazi izrekov iz tega poglavja večinoma niso navedeni.

V nadaljevanju se problem omeji na iskanje pogojev za obstoj ustreznega kocikla α pri trivialnem delovanju τ. Dokazani so potrebni pogoji za obstoj kocikla α, ki naredi križni produkt $K_\tau^\alpha G$ polenostaven.

Izkaže se, da so ti pogoji tudi zadostni, če je grupa G super rešljiva (to je tudi vsaka p-grupa).

Abstract

Let K be any field of characteristic $p > 0$ and G a finite group. The purpose of this work is to find necessary and sufficient conditions for the existence of cocycle α which twists the skew group algebra $K_\tau G$ to semisimple crossed product $K_\tau^\alpha G$.

At the beginning there is background theory. Proofs of the theorems quoted there are mostly omitted.

In chapter two the problem is reduced to crossed products with trivial action τ. Necessary conditions for the existence of cocycle α which makes crossed product $K_\tau^\alpha G$ simple are provided.

It turns out, conditions are also sufficient if group G is supersoluble.

Literatura

[1] Eli Aljadeff, Derek J.S. Robinson, *Semisimple algebras, Galois actions and group cohomology*, Journal of Pure and Applied Algebra 94 (1994) 1-15

[2] Eli Aljadeff, S. Rosset, *Global dimension of crossed products*, Journal of Pure and Applied Algebra 40 (1986) 103-113

[3] Gregory Karpilovsky, *Group Representations, Volume 1*, Elsevier science publishers B.V., 1992

[4] Gregory Karpilovsky, *Group Representations, Volume 2*, Elsevier science publishers B.V., 1993

[5] Gregory Karpilovsky, *The Jacobson Radical of Classical rings*, Longman Group UK Limited, 1991

[6] Gregory Karpilovsky, *The Schur Multiplier*, Clarendon press - Oxford, 1987

[7] Donald Passman *Infinite Crossed Products*, Academic Press Inc., 1989

[8] Jean-Pierre Serre *Local Fields*, Springer-Verlag New York Inc., 1979