REMARKS ON GENERALIZED BRAUER PAIRS

CONSTANTIN COSMIN TODEA

Abstract. Let k be an algebraically closed field of characteristic p, G a finite group, N a normal subgroup of G and c a G-stable block of kN. Then there exist generalized Brauer pairs, called (c, G)-Brauer pairs, and denoted by (Q, e_Q) , where Q is a p-subgroup of G and e_Q a block of $kC_N(Q)$. If G = N, then the generalized Brauer pairs becomes the usual c-Brauer pairs. If (P, e_P) is a maximal (c, G)-Brauer pair, we prove that e_P is a nilpotent block. We also prove a generalization of Brauer's third main theorem.

MSC 2010. 20C20.

Key words. Finite group, block, generalized Brauer pair, Brauer homomorphism.

REFERENCES

- ALPERIN, J. and BROUÉ, M., Local methods in block theory, Ann. of Math., 110 (1979), 143–157.
- [2] BROUÉ, M. and PUIG, L., Characters and local structures in G-algebras, J. Algebra, 63 (1980), 306–317.
- [3] KESSAR, R. and STANCU, R., A reduction theorem for fusion systems of blocks, J. Algebra, **319** (2008), 806–823.
- [4] KÜELSHAMMER, B. and PUIG, L., Extensions of nilpotent blocks, Invent. Math., 102 (1990), 17–71.
- [5] ROTMAN, J.J., Advanced Modern Algebra, Prentice Hall, 2003.
- [6] THÉVENAZ, J., G-algebras and Modular Representation Theory, Clarendon Press, Oxford, 1995.

Received July 31, 2009 Accepted September 10, 2009 Technical University Department of Mathematics Str. G. Barițiu nr. 25 400027 Cluj-Napoca, Romania E-mail: Constantin.Todea@math.utcluj.ro

This research has been supported by the Romanian PN-II-IDEI-PCE-2007-1 project ID_532, contract no. 29/01.10.2007.