Trivial Units in Commutative Group Algebras

PETER DANCHEV

13 General Kutuzov Street, bl. 7, floor 2, flat 4, 4003 Plovdiv, Bulgaria
pvdanchev@yahoo.com

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Abstract: Let $G$ be an arbitrary abelian group and let $R$ be a commutative unitary ring of arbitrary characteristic. A necessary and sufficient condition is given for when all units in the group ring $RG$ are trivial provided that either supp($G$) ∩ inv($R$) ≠ ∅ or $RG$ is modular. In particular, we establish a comprehensive characterization by finding a criterion when $RG$ has only trivial units provided that char($R$) is a positive number greater than 1. These achievements strengthen results due to Karpilovsky (Arch. Math. Basel, 1983), Herman-Li-Parmenter (Can. Math. Bull., 2005) and the author (Math. Commun., 2005).

Key words: normed units, trivial units, group rings, indecomposable rings, reduced rings, idempotents, nilpotents.

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References


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