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Direct Decompositions and Basic Subgroups in Commutative Group Rings

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Abstract

An attractive interplay between the direct decompositions and the explicit form of basic subgroups in group rings of abelian groups over a commutative unitary ring are established. In particular, as a consequence, we give a simpler confirmation of a more general version of our recent result in this aspect published in Czechoslovak Math. J. (2006).

Key words: Direct decompositions; basic subgroups; normed units; group rings.

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1 Introduction

Throughout the text of this brief paper, let G be an abelian group with p-component G_p, written by multiplicative record, and R a commutative ring with identity (of prime characteristic, for instance p, for applications). As usual, RG denotes the group ring of G over R with group of normalized units $V(RG)$, abbreviated for facilitating of the exposition via $V(G)$. For a subgroup A of G, we define by the same reason $I(G;A)$ as the relative augmentation ideal of RG with respect to A. All other notation and terminology from the abelian group