THESIS ABSTRACT

S.M. Woods (née Kaye), On perfect and semi-perfect group rings, McGill University, August 1969. (Supervisor: I. Connell)

An attempt is made to find conditions on a group G and a ring A for the group ring AG to be perfect or semi-perfect, as defined by Bass. It is shown that AG is perfect if and only if A is perfect and G is finite. For commutative semi-perfect group rings, the problem is reduced to the case where A is local, G is finite, and the order of G is a unit in A. There, let K denote the residue class field of A and n the exponent of G. Then AG is semi-perfect if and only if every monic factor of $X^n - 1$ in K[X] lifts to a monic factor of $X^n - 1$ in A[X]. In the non-commutative case, when G is locally finite, the problem is reduced to the case where A has a unique maximal left ideal. The internal structure of commutative semi-perfect group rings is studied.

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