
ALLEN HERMAN, University of Regina, Regina, SK, S4S 0A2
The Group of Ring Automorphisms of a Rational Group Algebra

Ring automorphisms of the rational group algebra $\mathbb{Q}G$ of a finite group G come in two types: inner automorphisms that leave every simple component of $\mathbb{Q}G$ invariant, and outer automorphisms that interchange at least two of these simple components.

In order to detect the existence of outer automorphisms of $\mathbb{Q}G$, one must be able to determine whether or not two simple components of $\mathbb{Q}G$ are ring isomorphic. It is automatic that two isomorphic simple components will have isomorphic centers, equal dimension, and the same local Schur indices at each rational prime. However, an example of a group will be given to show that these conditions are not sufficient. It has two simple components that are ring isomorphic but not Morita equivalent. Procedures for determining whether two simple components of $\mathbb{Q}G$ are ring isomorphic will be discussed.