

# Isomorphisms, automorphisms and torsion units of integral group rings of finite groups

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**Abstract:** The talk presents a survey on the isomorphism problem of integral group rings of finite groups. The interplay between automorphisms and isomorphisms will be considered. This leads to the  $F^*$  - theorem. It will become transparent that in some sense  $\mathbb{Z}G$ ,  $G$  finite, determines the group  $G$  “almost” up to isomorphism.

The second part gives an overview on open problems concerning torsion units of  $\mathbb{Z}G$ . Applications of the  $F^*$  - theorem are given, in particular for Sylow like theorems in the units of  $\mathbb{Z}G$  and related problems concerning ordinary character tables of finite groups.