

Morava K -theory rings for the modular groups in Chern classes

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Abstract Morava K -theory rings of classifying spaces of the modular and quasi-dihedral groups are calculated in terms of Chern characteristic classes and the Honda formal group law.

Keywords Transfer · Formal group law · Chern class

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1 Introduction and statements

The rank of Morava K -theory ring of the classifying space of a finite group as a free $K(s)^*$ module is given by the Hopkins–Kuhn–Ravenel generalized character theory [8]. For many finite p -groups, the Morava K -theory ring is generated by transferred Chern classes (this is false in general, see [10]).

In [3, 4] we studied the Chern classes of a transferred bundle in terms of transferred classes of the bundle. As an application, we derived formulas for the stable Euler classes $Tr_G(1)$ for these groups and promised to simplify presentations of $K(s)^*(BG)$ when G is modular or quasi-dihedral.

Thus in this paper we consider the group

$$G_{p^{m+2}} = \langle a, b \mid a^{p^{m+1}} = b^p = 1, bab^{-1} = a^{p^m+1} \rangle, \quad m > 1.$$

This group is called the modular group $M_{p^{m+2}}$ if $p \geq 3$, and the quasi-dihedral group QD_{2m+2} , if $p = 2$, $m \geq 3$.

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