

Generalized Bernoulli numbers on the KO -theory

Dedicated to Professor Yasutoshi Nomura on his 60th birthday

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ABSTRACT. The Bernoulli number defined on the generalized cohomology theory is studied, mainly focusing it on complex unoriented theories. We give a concrete formula about it on the KO -theory for the stunted quaternionic quasi-projective space, and apply the formula to represent a factorization of the double transfer map concerning such projective spaces.

Introduction

In this paper, I study the Bernoulli numbers defined on the generalized cohomology theory, and represent some concrete formulas of them concerning the quaternionic quasi-projective spaces. Significant combination of the geometry with the classical Bernoulli numbers has been shown by Bott [6] and Adams [1] in the study of the J -theory. Extending such utility, Miller [8] has introduced a generalized sense of Bernoulli numbers by giving them for each formal group law over a complex oriented theory, and Ray [10] has discussed some related articles. Our purpose here is to make such treatment of the Bernoulli numbers applicable also to complex unoriented theories. We pick up a typical case of the real KO -theory, and show effectiveness of our definition.

In §1, we prepare some characteristic classes of vector bundles and give our definition of the Bernoulli numbers. In §2, we describe the KO -theoretical Bernoulli numbers for the vector bundles which define the quaternionic quasi-projective spaces. The result is summarized in Proposition 2.5. In §3, we apply the result of §2 to a factorization of the double transfer maps combined with the quaternionic quasi-projective spaces. The contents of this section are related to [7], and our main result is Theorem 3.8.

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