Nguyen H. V. Hung\* (nhvhung@vnu.edu.vn), Department of Mathematics, Wayne State University, FAB, Detroit, MI 48202. The conjecture on spherical classes and the algebraic transfer.

We discuss on our studies motivated by W. Singer's two fundamental works on the invariant-theoretic description of the lambda algebra and on the algebraic transfer.

We study an algebraic version of the conjecture on spherical classes. We show that the algebraic conjecture can equivalently be formulated in terms of W. Singer's description of the lambda algebra as follows: "any element in the Dickson algebra of at least 3 variables induces the zero-class in the homology of W. Singer's complex, which is dual to the lambda algebra". The algebraic conjecture has been proved in several special cases. It has been shown that every element in the Dickson algebra of at least 3 variables is hit by the Steenrod algebra acting on the corresponding polynomial algebra.

We investigate the algebraic transfer that maps from the coinvariants of certain representations of the general linear groups to the cohomology of the Steenrod algebra. We prove that the transfer  $Tr_s$  is no longer an isomorphism for  $s \ge 4$ . We show that the elements of any  $Sq^0$ -family in the cohomology of the Steenrod algebra, except at most its first (s-2) elements, are either all detected or all not detected by  $Tr_s$ , for every s.

We complete finding the image of the fourth algebraic transfer. (Received August 14, 2008)