

The squaring operation on A -generators of the Dickson algebra

Hung N.H.V., Quynh V.T.N.

Department of Mathematics, Vietnam National University, Hanoi, 334 Nguyễn Trãi Street, Hanoi, Viet Nam

Abstract: We study the squaring operation Sq^0 on the dual of the minimal A -generators of the Dickson algebra. We show that this squaring operation is isomorphic on its image. We also give vanishing results for this operation in some cases. As a consequence, we prove that the Lannes-Zarati homomorphism vanishes (1) on every element in any finite Sq^0 -family in $Ext^*_A(F_2, F_2)$ except possibly the family initial element, and (2) on almost all known elements in the Ext group. This verifies a part of the algebraic version of the classical conjecture on spherical classes. ©2009 The Japan Academy.

Author Keywords: Cohomology of the Steenrod algebra; Invariant theory; Lannes-Zarati homomorphism; Modular representations; Spherical classes

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Correspondence Address: Hung, N.H.V.; Department of Mathematics, Vietnam National University, Hanoi, 334 Nguyễn Trãi Street, Hanoi, Viet Nam

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Authors with affiliations:

- Hung, N.H.V., Department of Mathematics, Vietnam National University, Hanoi, 334 Nguyễn Trãi Street, Hanoi, Viet Nam
- Quynh, V.T.N., Department of Mathematics, Vietnam National University, Hanoi, 334 Nguyễn Trãi Street, Hanoi, Viet Nam

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