

1014-55-1531      **R C Mitchell\*** ([mitchell@math.purdue.edu](mailto:mitchell@math.purdue.edu)), 2450 Sycamore Lane, Apartment 10A, West Lafayette, IN 47906. *Calculation of Gerstenhaber Operations on  $H^*(R, R)$ , when  $R = \mathbb{Q}[X]/p$ .* Preliminary report.

The paper "The Cohomology Structure of an Associative Ring" (Gerstenhaber 1963) establishes the existence of a cup product and a Lie bracket on Hochschild cohomology. The paper "On the Characteristic Zero Cohomology of the Free Loop Space" (L. Smith 1980) gives a short resolution of a GCI algebra  $R$  as a module over its enveloping algebra. Using this, it is possible to compute the Hochschild cohomology of the ring  $R$ . However, it is not evident how the Gerstenhaber operations can be seen in the resolution of Larry Smith.

By explicitly producing a quasi-isomorphism between the two resolutions, the operations may be calculated on  $H^*(R, R)$ , when  $R = \mathbb{Q}[X]/p$ , where  $X$  is a list of evenly graded indeterminates and  $p$  is a homogeneous polynomial. (Received September 28, 2005)