Abstract

In this thesis we study the Kriz model $E(M,n)$, for the configuration spaces at large, for $M$ an arbitrary smooth complex projective variety, and in particular, for the family of Riemann surfaces $\mathcal{M}_g$ with genus $g \geq 1$. There is an induced action of the symmetric group $S_n$ on the differential graded algebra $E(M,n)$, some representation theory of this DGA is studied. The cohomology groups of 2,3 and 4-point ordered and unordered configuration spaces of Riemann surfaces are computed with tools borrowed from the representation theory of $S_n$. 