Abstract

In this thesis we study the Križ 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 $\mathcal{S}_n$ 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 $\mathcal{S}_n$.