

Homology of Picture Groups

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Abstract

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To each Dynkin quiver, using domains of semi-invariants, we associate “spherical semi-invariant picture” $L(Q)$. To such a picture $L(Q)$ we associate the “picture group” $G(Q)$. In order to compute the homology of the picture group $G(Q)$, we construct the picture space $X(Q)$ and show that $X(Q)$ has only first homotopy group non-trivial, and that group is actually isomorphic to $G(Q)$, i.e. $X(Q)$ is a $K(\pi, 1)$ for $G(Q)$. Using this, we can compute homology of the picture group $G(Q)$ by computing homology of the picture space $X(Q)$. For the quiver of type A_n , we show that the homology groups are free abelian groups of ranks given by ballot numbers. Some results for the quivers of type D will be stated. Also, many open questions will be stated.