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# MONOMIAL POSETS AND THEIR LEFSCHETZ INVARIANTS

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## Abstract

The Euler-Poincaré characteristic of a given poset  $X$  is defined as the alternating sum of the orders of the sets of chains  $Sd_n(X)$  with cardinality  $n + 1$  over the natural numbers  $n$ . Given a finite group  $G$ , Thévenaz extended this definition to  $G$ -posets and defined the Lefschetz invariant of a  $G$ -poset  $X$  as the alternating sum of the  $G$ -sets of chains  $Sd_n(X)$  with cardinality  $n+1$  over the natural numbers  $n$  which is an element of Burnside ring  $B(G)$ . Let  $A$  be an abelian group. We will introduce the notions of  $A$ -monomial  $G$ -posets and  $A$ -monomial  $G$ -sets, and state some of their categorical properties. The category of  $A$ -monomial  $G$ -sets gives a new description of the  $A$ -monomial Burnside ring  $B_A(G)$ . We will also introduce Lefschetz invariants of  $A$ -monomial  $G$ -posets, which are elements of  $B_A(G)$ . An application of the Lefschetz invariants of  $A$ -monomial  $G$ -posets is the  $A$ -monomial tensor induction. Another application is a work in progress that aims to give a reformulation of the canonical induction formula for ordinary characters via  $A$ -monomial  $G$ -posets and their Lefschetz invariants. For this reformulation we will introduce  $A$ -monomial  $G$ -simplicial complexes and utilize the smooth  $G$ -manifolds and complex  $G$ -equivariant line bundles on them.

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