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Sheila Sundaram* (shsund@comcast.net). *The reflection representation in the homology of subword order.* Preliminary report.

This paper examines the homology representation of the symmetric group S_n on rank-selected subposets of subword order. We prove that the action on the rank-selected chains is a nonnegative integer combination of tensor powers of $S_{(n-1,1)}$, and show that its Frobenius characteristic is h -positive and supported on the set $T_1(n) = \{h_\lambda : \lambda = (n-r, 1^r), r \geq 1\}$.

We give an explicit formula for the homology module for words of bounded length, as a sum of tensor powers of the S_n -irreducible $S_{(n-1,1)}$ indexed by the partition $(n-1, 1)$. This recovers, as a special case, a theorem of Björner and Stanley for words of length at most k . We exhibit a curious duality in homology in the case when one rank is deleted.

We also show that in many cases, the rank-selected homology modules, modulo one copy of the reflection representation, are h -positive and supported on the set $T_2(n) = \{h_\lambda : \lambda = (n-r, 1^r), r \geq 2\}$. (Received July 28, 2020)