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Yifei Li* (yli236@uis.edu). *A q -analogue of a result of Carlitz, Scoville and Vaughan via the homology of posets.*

Let $f(z) = \sum_{n=0}^{\infty} (-1)^n z^n / n!n!$. In their 1975 paper, Carlitz, Scoville and Vaughan provided a combinatorial interpretation of the coefficients in the power series $1/f(z) = \sum_{n=0}^{\infty} \omega_n z^n / n!n!$. They proved that ω_n counts the number of pairs of permutations of \mathcal{S}_n with no common ascent. This paper gives a combinatorial interpretation of a natural q -analogue of ω_n by studying the top homology of the Segre product of the subspace lattice $B_n(q)$ with itself. We also derive an equation that is analogous to a well-known symmetric function identity: $\sum_{i=0}^n (-1)^i e_i h_{n-i} = 0$, which then generalizes our q -analogue to a symmetric group representation result. (Received September 10, 2021)