Stembridge codes and Permutohedral varieties

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The Eulerian polynomial is a classic and important polynomial in combinatorics. It is well known that the Eulerian polynomial has a geometric connection in terms of the Hilbert series of the cohomology of the permutohedral variety. In this talk, we answer a question of Stembridge on finding a geometric explanation of the permutation representation this cohomology carries. Our explanation involves an $S_n$-equivariant bijection between a basis for the Chow ring of the Boolean matroid and codes introduced by Stembridge. If there is enough time, I will briefly describe a parallel story of the stellohedral variety.