Motivated by the generalization of Ehrhart theory with group actions, this project makes progress towards obtaining the
equivariant Ehrhart theory of the permutahedron. The fixed slices of the permutahedron are the polytopes that are fixed
by acting on the permutahedron by a permutation. We prove some general results about the fixed slices. In particular,
we compute their dimension, show that they are combinatorially equivalent to permutahedra, provide hyperplane and
vertex descriptions, and prove that they are zonotopes. Lastly, we obtain a formula for the volume of these fixed slices,
which is a generalization of Richard Stanley’s result of the volume for the standard permutahedron. This is joint work
with Federico Ardila (San Francisco State University) and Anna Schindler (North Seattle College). (Received February
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