1065-52-245 **Jesus De Loera** (deloera@math.ucdavis.edu), One Shields Avenue, Davis, CA 95616, **Katherine Jones** (kljones@math.ucdavis.edu), One Shields Avenue, Davis, CA 95616, and **Mohamed Omar*** (momar@ucdavis.edu), One Shields Avenue, Davis, CA 95616. *Permutation Polytopes and Ehrhart Polynomials.*

Permutation polytopes are convex hulls of real representations of finite groups. The Birkhoff polytope is a classical example, and it is well known that this polytope is the convex hull of doubly stochastic matrices. Of particular interest has been the study of volumes of the Birkhoff polytope and its faces. We study this in a more general context by studying Ehrhart polynomials of general permutation polytopes, providing an intimate interplay between convex geometry, group theory, and optimization. (Received September 14, 2010)