1123-05-7 **Robert Davis*** (davisr@math.msu.edu), Department of Mathematics, Michigan State University, 619 Red Cedar Rd., East Lansing, MI 48824, and **Bruce E. Sagan** (sagan@math.msu.edu). *Pattern-Avoiding Polytopes.*

The permutohedron and the Birkhoff polytope are two well-studied polytopes related to many areas of mathematics. This talk will discuss generalizations of these polytopes by considering subpolytopes whose vertices correspond to certain avoidance classes of permutations. We explore their combinatorial structure as well as their Ehrhart polynomials and Ehrhart series. In two specific cases we will identify when the polytopes have symmetric and unimodal h^*-vectors, whose proofs show an elegant interplay among pattern avoidance, poset topology, discrete geometry, and physics. (Received May 07, 2016)