

**Meeting:** 1005, Newark, Delaware, SS 1A, Special Session on Homotopy Theory (in Honor of Donald M. Davis's and Martin Bendersky's 60th Birthdays)

1005-55-149      **David T. Allen\*** (dallen@iona.edu). *Applications of the Homotopy Groups of Toric Spaces*. Preliminary report.

Given an  $n$ -dimensional,  $q$ -neighborly simple convex polytope  $P$  there is a collection of interlocking fibrations that relate the homotopy groups of the associated moment angle complex  $Z_P$ , the borel space  $B_T P$  and the family of toric manifolds that sit over  $P$ . Buchstaber and Panov have computed  $\pi_{2q+1}$  for each of these spaces using a particular cellular structure on  $B_T P$ . We determine the unstable co-action on  $R^1 PBP_*(B_T P)$  through a range and show that it coincides with the co-action on spheres whose dimension depends on the combinatorics. As a result,  $\pi_{2q+2}$  can be computed for any toric manifold. As an application of the techniques developed a simplicial complex  $K$  is constructed such that the homotopy groups of the associated moment angle complex  $Z_K$  is computed for a range that is approximately twice of that given by Buchstaber and Panov's techniques allowing us to deduce the homotopy type of  $Z_K$ . (Received February 07, 2005)