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Vaughan K McDonald (vmcdonald@college.harvard.edu) and **Jiyang Gao***
(gaojy98@mit.edu). *Generating Functions for f -vectors and the cd -index of Weight Polytopes.*

We studied the f -vector and cd -index of a weight polytope (or Wythoff polytope), which is the convex hull of the orbit of point in space under the action of a finite reflection group. We show that a formula of Renner for the f -vector in the Weyl group case is also valid for arbitrary reflection groups, via results of Maxwell. We then use this to continue work begun by Golubitsky, giving generating functions for the f -vectors in all of the cases where the weight polytope is simple. We then further apply Maxwell's results to study the cd -index in non-simple cases, including giving a generating function that lets one compute the cd -indices of all hypersimplices. (Received September 23, 2018)