1084-52-287 **Luis Rademacher*** (lrademac@cse.ohio-state.edu), Dreese Labs 495, 2015 Neil Ave., Columbus, OH 43210. *Simplicial polytopes that maximize the slicing constant are highly symmetric.*

The slicing constant L_K is an affine-invariant measure of the spread of a convex body K. For a d-dimensional convex body K, L_K can be defined by $L_K^{2d} = \det(A(K))/(\mathrm{vol}(K))^2$, where $A(K)$ is the covariance matrix of the uniform distribution on K. It is an outstanding open problem to find a tight asymptotic upper bound of the slicing constant as a function of the dimension. It has been conjectured that there is a universal constant upper bound. The conjecture is know to be true for several families of bodies, in particular, highly symmetric bodies such as bodies having an unconditional basis. It is also know that maximizers cannot be smooth. In this work we show progress towards reducing to a highly symmetric case among non-smooth bodies. More precisely, we show that if a simplicial d-polytope K is a maximizer of the slicing constant among d-dimensional convex bodies, then when K is put in isotropic position it must be isohedral, that is, its symmetry group acts transitively upon facets. In particular, all facets are congruent. (Received September 03, 2012)